

In This Issue—*Europe's Small Cars*

MOTOR AGE

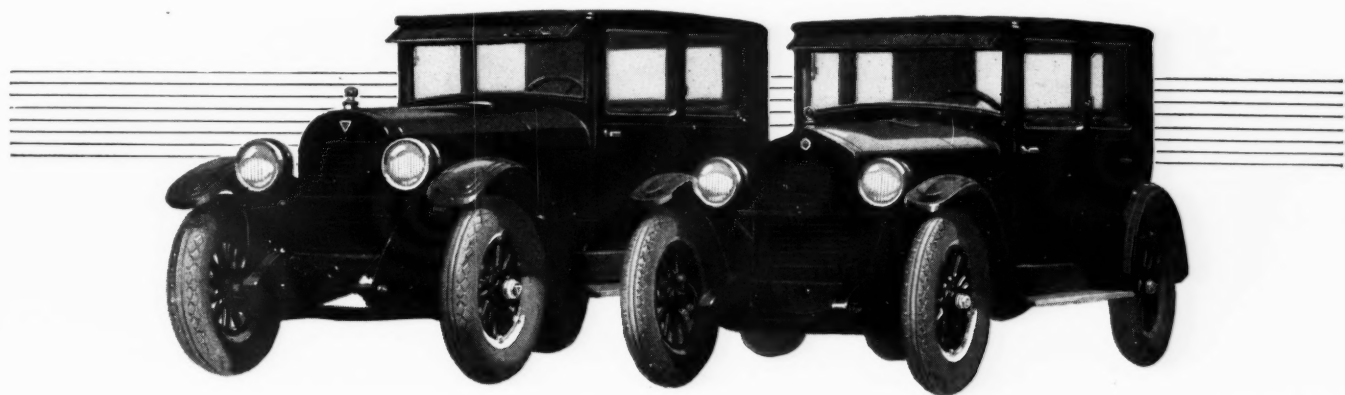
Vol. XLVIII
Number 17

PUBLISHED WEEKLY AT 5 SOUTH WABASH AVENUE
CHICAGO, OCTOBER 22, 1925

Thirty-five Cents a Copy
Three Dollars a Year

HUDSON-ESSEX

LARGEST SELLING 6-CYLINDER CARS IN THE WORLD



HUDSON COACH

\$1195

ESSEX COACH

\$795

Hudson-Essex cars give dealers unrivalled position in the close competition of today.

They are the largest selling 6-cylinder cars in the world. The line has proved over and over again the most profitable dealer proposition, with greater possibilities for growth than any opportunity in the automotive field. The proof is all about you in the active sales and prosperity of Hudson-Essex dealers.

Fast sales at low selling cost, small service expense, and no investment in slow-moving models, mean real profits and a sound assurance of permanent, growing business.

The Outstanding Dealer Opportunity of Motordom

Hudson Brougham \$1495

Hudson (Seven Pass.) Sedan \$1695

All Prices Freight and Tax Extra

HUDSON MOTOR CAR COMPANY, DETROIT, MICHIGAN

STRENGTH



TEST
No. 1



This shows extreme
thinness of wrench
with which test
was made.

This test made with the long slim tappet wrench
shown at the right, which a strong man was
unable to break or permanently bend.

In actual use the strain is never applied to the
"flat side", but because of its extreme thinness
this wrench offers an excellent opportunity to
demonstrate the inherent "Strength" of all
Bonney Chrome Vanadium Wrenches.

PRACTICALLY INDESTRUCTIBLE

Made of that super-steel "Chrome Vanadium", drop forged and scientifically heat treated, every Bonney "C V" Engineer Wrench is guaranteed to strip the thread of any standard U. S. S. or S. A. E. nut, or break the bolt BEFORE THE JAWS WILL SPREAD OR BREAK.

Master Mechanics everywhere are replacing their ordinary wrenches with BONNEY "CHROME VANADIUM" WRENCHES.

They can be purchased in complete sets in durable tool rolls, or individually, if you prefer to replace your old wrenches a few at a time.

You can secure from your jobber. Write for detailed information

Bonney Forge & Tool Works
Allentown, Pa.

Makers of Special Service Wrenches of Chrome Vanadium, Carbon Steel
Drop Forged Wrenches, Stillson Wrenches, Vises and Drop Forgings.

BONNEY
Chrome-**CV**-Vanadium
WRENCHES

Patents Pending



*"CV" is a Bonney trade
mark registered in the
U. S. Pat. Office.
Chrome Vanadium regis-
tered August 11, 1925.



THE NEW MOON LINE



The MOON
"Year Ahead"
Six

The DIANA
Light
Straight 8

Four Successive Months of New Sales Records

The new low price of the Moon Six line sets a new world's mark for quality in its price class.

The Diana Eight leads the entire industry in its daring design, its new-day engineering, its great power plant.

Each car in its class sets a new style, a new class for its competitor to shoot at.

That, in a word, is the reason why each of the

four last months of Moon sales has equaled the usual top month of April production.

It is, also, the reason why Moon is a good car for you to sell.

If you have the stuff on the ball—Moon is the ball for you to shoot.

Write us for particulars if you want to *make money* and not simply *be in* the automobile business.

The Product of a \$75,000,000 Combination

MOON MOTOR CAR COMPANY :: :: SAINT LOUIS, U. S. A.

ECLIPSE

STARTER PRODUCTS



CAUTION: In our Eclipse Bendix Drive advertisements, appearing each month in The Saturday Evening Post and The Literary Digest, the public is being cautioned to buy none but genuine parts and to look for the name "Bendix" on each part.

The Standard of Quality

None but a genuine spring for Eclipse Bendix Drive assures our standard of satisfactory, dependable service. Your customers want and deserve the best.

It pays to sell none but
GENUINE PARTS
FOR

ECLIPSE
BENDIX
DRIVE

ECLIPSE MACHINE COMPANY, ELMIRA, N.Y.

ECLIPSE MACHINE COMPANY, HOBOKEN, NEW JERSEY
ECLIPSE MACHINE COMPANY, Ltd., WALKERVILLE, ONTARIO

MOTOR AGE

Reg. U. S. Pat. Office

Vol. XLVIII

No. 17

JULIAN CHASE, Directing Editor
B. M. IKERT, Technical Editor
A. H. PACKER, Associate Editor
W. L. CARVER, Field Editor, Detroit
JOHN C. GOURLIE, News Editor

SAM SHELTON, Editor
CLARENCE PHILLIPS, Asst. Editor.
TOM WILDER, Architectural Editor
LESLIE S. GILLETTE, Field Editor,
Detroit
M. W. BAKER, Asst. News Editor
JAMES C. GRANT, Detroit News Rep.

MOTOR AGE is published every Thursday by
CHILTON CLASS JOURNAL COMPANY

Mallers Building, 5 South Wabash Avenue, Chicago

C. A. MUSSELMAN
President and General Manager

J. S. HILDRETH, Director of Sales H. J. REDFIELD, Treasurer
A. H. VAUX, Secretary and Assistant Treasurer

Owned by United Publishers Corporation, 239 West 39th Street, New
York, CHARLES G. PHILLIPS, President; A. C. PEARSON, Vice-President;
FRITZ J. FRANK, Treasurer; H. J. REDFIELD, Secretary.

Cable Address: Motage, Chicago
Telephone: Central 7045

OFFICES

New York—U. P. C. Bldg., 239 West 39th St.; Phone
Pennsylvania 0080.

Detroit—7338 Woodward Ave.; Phone Empire 4890.

Cleveland—540 Guardian Bldg.; Phone Main 6860.

Philadelphia—56th and Chestnut Sts., Phone Sherwood 1424.

Indianapolis—519 Merchants Bank Bldg.; Phone Riley 3212.

SUBSCRIPTION RATES: United States, Mexico and U. S. Possessions,
\$3.00 per year; Canada, \$5.00 per year; all other countries in Postal Union,
\$6.00 per year; single copies, 35 cents.

Member of the Audit Bureau of Circulations.
Member, Associated Business Papers, Inc.

Copyright, 1925, by CHILTON CLASS JOURNAL COMPANY

CONTENTS

Index to Automotive News.....	9
Strict Practice of Association Code Brings Success.....	10
By Ben S. Brown	
What Is a Small Car?.....	13
By W. F. Bradley	
Radio Set Trouble Shooting.....	14
By A. H. Packer	
Check System Aids Used Car Sales.....	17
Taking Shop Equipment to the Buyer.....	17
How to Adjust Brakes.....	18
By B. M. Ikert	
Star Six Furnished in Three Body Models.....	20
By Donald Blanchard	
New Limousine Type Yellow Cab With Knight Engine.....	21
Improvements Made in Willys-Knight Taxicab.....	21
MOTOR AGE'S Picture Pages.....	22-23
The Readers' Clearing House.....	24
The Market's New Offerings.....	29
Getting More Out of the Shop.....	30
Editorial	31
News of the Industry.....	32-43
Along Automobile Row.....	40
With the Associations.....	41
Coming Motor Events.....	42
Squeeks and Rattles.....	43
Specifications	44
CLASSIFIED ADVERTISING SECTION.....	81
INDEX TO ADVERTISEMENTS.....	82-83

Subscriptions accepted only from the Automotive Trade
Entered as Second Class Matter, Sept. 19, 1899, at the Post Office at
Chicago, Ill., under Act of March 6, 1879

Special "Yankee"
construction prevents
blade from turning
in handle. Does away
with the chief
trouble usually found
in screw-drivers.



**You don't
have to coddle
a screw-driver that
bears the name "YANKEE"**

In a hurry. No time to look for a tool. "Hand me that screw-driver!"

Every day in your shop your screw-drivers are called on to do jobs for which they are not intended.

A "Yankee" Screw-driver will come through those rough jobs without chipping, bending, or turning.

Overstrength is built into it. Blade tempered for toughness and stiffness.

A "Yankee" device (found in no other screw-driver) makes blade and handle practically a one-piece tool.

"YANKEE" Plain Screw-drivers

Every individual blade is tested twice before leaving factory. That's why a "Yankee" Screw-driver is certain to last longer.

You can get giant sizes with blades up to 30 inches in length, with which you can reach in anywhere and drive the heaviest screws.

No. 90—Standard style, 15 sizes, 1½ to 30 in. blades.

No. 95—Cabinet style, 11 sizes, 2½ to 15½ in. blades.

Some other "YANKEE" Tools

Ratchet Bit Brace Ratchet Breast Drill
Ratchet Screwdrivers Ratchet Bench Drill

"Yankee" on the tool you buy means the utmost in quality, efficiency and durability.

Dealers everywhere sell "Yankee" Tools

NORTH BROS. MFG. CO., Philadelphia, U. S. A.

"YANKEE" TOOLS
Make Better mechanics





FIGURE it this way—commission on gross sales, less sales expense, used car handling and overhead equals PROFIT—or LOSS.

Every man in an important executive position in this company has had long, actual dealer experience.

If YOU want to talk actual FIGURES and FACTS, we believe our understanding of YOUR problems and market should be of value. Every plan for Stutz development is based upon these figures.

FREDRICK E. MOSKOVICS
President
STUTZ MOTOR CAR COMPANY—
OF AMERICA, Inc.
INDIANAPOLIS, INDIANA.



*This symbol means that Studebaker prices do not
include the profits of outside body-makers*

One-Profit Value
Unit-Built Construction
“No-Yearly-Models”
Used Car Pledge

*—four reasons why the Studebaker
franchise is increasing rapidly in value.*

THE STUDEBAKER CORPORATION
OF AMERICA
SOUTH BEND, INDIANA

T H I S I S A S T U D E B A K E R Y E A R



Nash Leads the World in Motor Car Value

Average Monthly Nash Sales Increase Is a Full 82%

For the past 13 consecutive months, ending September 30, the average monthly Nash sales gain has been 82%.

Those are the plain facts of one of the most phenomenal sales successes known to the industry.

No good dealer who is today *less than 100% satisfied* with the line he handles can afford to overlook the pointed significance of such figures.

And, mind you, this refers only to the tremendous nation-wide demand for Nash cars.

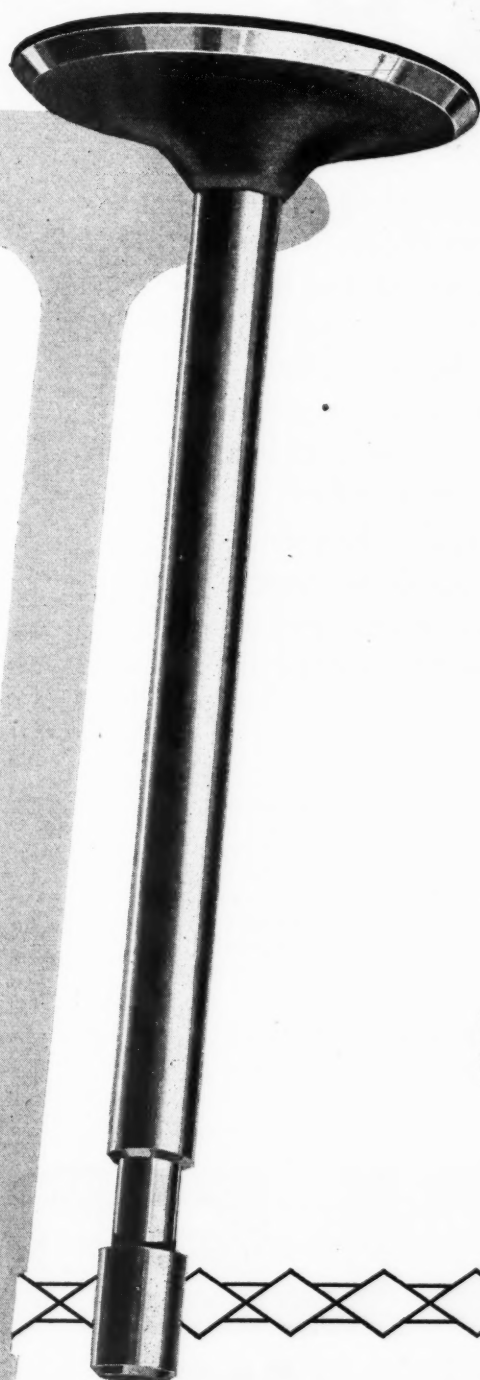
The new Ajax is another string to the Nash dealer's bow—and already sales and production of this unique motor car value is running well ahead of 100 cars per day.

What a line to handle! The Nash Advanced Six series for the upper crust of the popular-priced market; the Nash Special Six series for the great middle market; and the Ajax Six for the far greater lower-priced field.

(2440)
NASH

Profit—

By the Experience of Successful Garage Men



Garage and repair men who have studied the best and most *profitable* way to handle valve replacement jobs, find that installing a *complete new set* of valves is by far the best method.

Regrinding old valves has only been a makeshift.

A complete new set of valves costs the car owner very little more; it guarantees maximum power and speed from the engine; and *you make greater profits!*

Put in a complete new set of James Motor Valves in your next valve job. But be sure you get James Valves because they are the better valve.

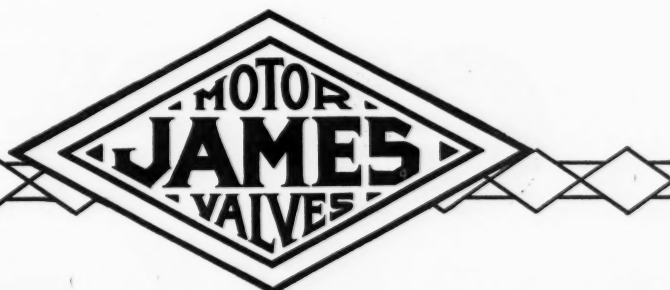
They are built strictly in accordance with car-maker's specifications. Stems are 1020 S. A. E. steel; heads are fine grey iron and electrical welding is employed in joining the head and stem together. Every valve is individually wrapped in wax paper, retaining its original fine finish.

Jobbers and dealers throughout the country carry complete stocks of James Motor Valves. If you are unsuccessful in obtaining James Motor Valves, write us and we will see that you are supplied without delay.

JAMES MOTOR VALVE COMPANY

1350 Maple Street

Detroit, Michigan





GROWTH

To insure continuance and increase of Chrysler quality, new and important manufacturing operations are being brought into our plants from time to time. The recent purchase of the great facilities of the American Body Company—one of the largest transactions of the year in the industry—is Chrysler's characteristic answer to the problem of supplying body models as dealers need them, and in the quantities needed. This and other developments which have maintained Chrysler's leadership in the industry, are reasons why the Chrysler franchise is becoming daily more profitable and more valuable. Your application will be treated in strictest confidence.

No. 1—Profit
No. 2—Product
No. 3—Sales Features
No. 4—Policy
No. 5—Growth

A notable product, high quality, obvious value, factory co-operation, liberal policies, high resale value—these are the fundamentals of a successful and profitable dealership. Watch for the Chrysler comments on these all-important phases of your business. This is the fifth of a series of important messages whose titles appear in the margin. Those which have gone before are well worth your reading. We will gladly send you copies of the entire series to date.

CHRYSLER SALES CORPORATION, DETROIT, MICH.
CHRYSLER CORPORATION OF CANADA, LIMITED, WINDSOR, ONTARIO

CHRYSLER

SIX ~ FOUR

MOTOR AGE

Vol. XLVIII

Chicago, October 22, 1925

No. 17

Summary and Index of Important Events in **This Week's Automotive News**

Detailed Stories from MOTOR AGE Staff Writers and Special Correspondents Appear in News Section Beginning on Page 32

AUTOMOTIVE production is being kept at low level and although sales point downward no sudden slump is expected this year. Page 32.

Used car show in fall instead of spring proves great success in Chicago. Page 32.

Auburn plans increase in capitalization and note issue to provide for manufacture of 4-cylinder line. Page 34.

Ford sets new record for production when output of new models reaches 8,135 Oct. 16. Page 33.

McFarlan now producing eight-cylinder series in eleven body types. Page 34.

Pennsylvania Automotive Association elects George A. Hoeveler president. Page 33.

Dealers in St. Louis well pleased with fall sales volume and with prospects for winter. Page 42.

Hupp Motor Car Corp. already building more than 100 of new six models daily, officials announce. Page 42.

Automobile manufacturers make tentative plans to buy vessels from U. S. Shipping Board to cut European transportation costs. Page 35.

Floyd Clymer, inventor of windshield spotlight, forms new company to manufacture and distribute patent air gage. Page 35.

Grey Goose Traveler and cabriolet roadster on eight-cylinder chassis are latest models in Wills Sainte Claire line. Page 35.

Automotive industry is given only one hour in which to present plea for tax reduction before House committee. Page 36.

General Motors sales to consumers in September show gain of 35,047 over same month year ago. Page 36.

Bert Dingley is named new service manager for Stutz. Page 36.

Thirty-nine different makes of cars are shown at Second Annual Closed Car Salon in Los Angeles. Page 43.

Colin Alfred Campbell is named sales promotion manager for Marmon. Page 43.

President H. H. Durr of Victor Rubber Co. is named receiver of that firm. Page 43.

Rating committee of Motor Truck Industries, Inc., plans session to consider plans for standardization of trucks. Page 37.

French racing board, alarmed at list of fatal accidents, plans to make rules lessening danger to drivers. Page 37.

Many changes are recorded in the trade personnel in Boston industrial territory. Page 37.

Safety instruction in schools helps reduce number of fatal accidents, survey shows. Page 38.

Nash reports net income for last three months of \$3,840,268. Same period a year ago shows net income of \$1,205,766. Page 38.

French automotive engineer advises European manufacturers to build but one model of car and build that in quantity. Page 39.

Increased business in San Francisco territory causes many staff expansions and personnel promotions. Page 39.

In Next Week's Issue—Stopping the Leaks That Drain Profits

Strict Practice of Association Code Brings Success

*Value of Practical Program Followed
by Kansas City Organization Proved
in Business of Its President—Yearly
Leases of Garage Space Return Profits*

By BEN S. BROWN

ABOUT March 1, 1917, George W. Arnold opened a small garage on Oak Street, at Thirteenth, in Kansas City, Mo., and began to render a service which was different. It had not only honest work in it, but a thoroughness which was exceptional, and a courtesy which was quite refreshing. And people liked it—liked it so well that they told their friends about it, and they in turn told others. And thus his business grew.

There was plenty of room for growth, for he began with practically no cash capital, but plenty of "nerve," as he called it. His determination was to give good and satisfactory service. He would make sure that it was satisfactory, for he would check it up with the customer and make him say that everything was O. K. before he would allow him to go out of the shop. This check-up often resulted not only in a pleased customer, but also additional service, or the sale of additional equipment.

By the end of his fourth year, or in 1921, he was running to capacity in a garage with 100 feet front, and a floor space of 1300 square feet, and found that he would have to move to larger quarters if he continued to meet the demands of his growing business. When a man is compelled to turn business away because of a lack of room, he is apt to look around for larger quarters.

At 1124 Locust Street he found the location which he decided would place him in close touch with the business that he would like to develop, and would be suitable for the building he wished to erect.

Having found his location, he proceeded to erect a building after his own ideals.

Windows occupy the larger part of the outer walls, so that the garage is filled with light, and the working conditions are as nearly ideal as possible. The inside walls are painted white, and the legs of the work benches are repainted once a month to insure that they always look up to standard.

In keeping with the idea of cleanliness and beauty, the

IN the October 8th issue of Motor Age an article was contributed by Ben S. Brown under the heading, "A Practical Trade Association Program." This article dealt with a number of the constructive accomplishments of the Automotive Trades Association of Kansas City, Mo., which, to a large extent, have resulted from application of principles applied in the private business of the association's president, George W. Arnold.

Mr. Arnold is so much a part of the Kansas City association and there is so close a relationship between his policies in his own business and his policies as head of the trade organization that Mr. Brown's first story naturally called for another—

A close-up of the business of George W. Arnold.

This is an intimate and graphic behind-the-scenes picture of an automotive business that has been exceptionally successful. Sit in on Mr. Brown's second installment.

floors of the garage are gone over daily with sawdust and a chemical solution; the windows are washed regularly, and the outside walks and approaches are kept clean. The workmen wear uniforms, with "Keystone" displayed on the backs, and when there is occasion for one of the men to get into a car to drive it out for a customer, he slips into a white coat which is kept hanging conveniently for his use.

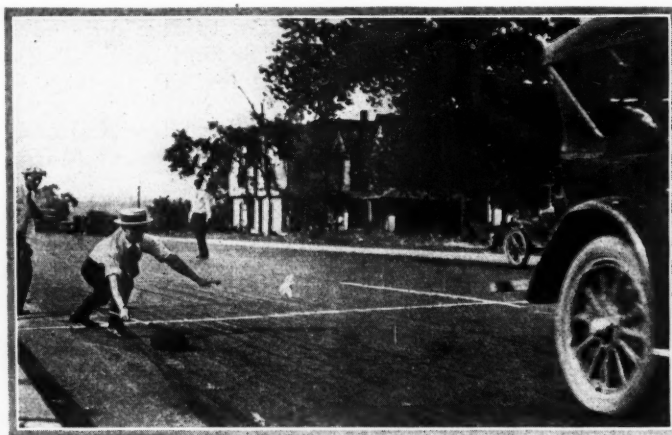
In the arrangement of the building, he has devoted the first floor to storage, but has a small shop down there and a tire and parts department which entices the customers to spend their money with him. On the second floor, reached by a short ramp from the street, as well as by a stairway from the inside, is located the main office, the accessory shop, the main work shop, and additional storage space. Altogether, there is floor space to the amount of 30,000 square feet in the building.

One of the most profitable departments of his business is the storage of

cars, and the care and service which is connected with it. It is his plan to develop 100 per cent customers—those who buy from him all the service which they may need on their cars.

To this end he makes yearly leases with his customers, he to furnish them 24 hour storage privileges the year around, and render such other service as may be agreed upon. Sometimes it takes months to get a man ready to sign up the annual lease, but that is the end to which he works with each one.

To the storage privileges, which places the customer in Class A, he adds other service, which is classified as to the amount. For Class B customers he adds the washing of the car, complete, twice a month, battery water service and the wiping off of the car as often as necessary. Class C customers receive all this and in addition have their cars thoroughly oiled and greased once a month. Motor oil, transmission and differential grease are charged for extra, according to the amount used.



The man with the flag is Mr. Arnold—here as president of the trade association flagging down a car in a brake test

All other services are extra, except of course water and air. All repairs and replacements are contracted for as they are needed, and it is the policy of the business to make the work done so satisfactory that the customer will gradually have everything he needs to have done attended to by the Keystone.

Lest there should be any misunderstanding as to the price of service in the storage and washing department, there is posted conspicuously a list of services offered and the rate charged for each. It contains the following items:

STORAGE

4 hours or less.....	35 cents
4 hours to 12 hours.....	50 cents
12 hours to 24 hours.....	75 cents
Per week, in advance.....	\$ 3.50
Per Month, in advance, Class A.....	10.00
Per Month, in advance, Class B.....	15.00 and up
Per Month, in advance, Class C.....	17.50 and up

SERVICE CHARGES

Putting on Chains.....	25 cents
Putting on Curtains.....	25 cents
Wiping off car.....	25 cents

WASHING RATES

Body Wash, all open cars.....	\$1.00
Two Passenger Coupes, Ford, Chevrolet, etc.....	1.00
Four Passenger Sedans, Coaches.....	1.50

COMPLETE WASH

Open cars, average size.....	2.00
Extra large, Cadillacs, etc.....	2.50
Two Passenger Coupe, Ford, Chevrolet, etc.....	2.50
Four Passenger Coupe, Sedans or Coaches.....	2.50

EXTRAS

Nickel polish, pump, radiator, etc.....	50 cents
Body polish, all cars.....	50 cents
Wire wheels, all cars.....	50 cents
Vacuum cleaner, 2 passenger coupe.....	50 cents
Vacuum cleaner, all other enclosed cars.....	\$1.00
Cleaning Motor.....	1.00

While admitting that these prices are a little higher than many garages charge, he says that the better service rendered by him is such that customers are glad to pay the increase in order to secure the more efficient and reliable service.

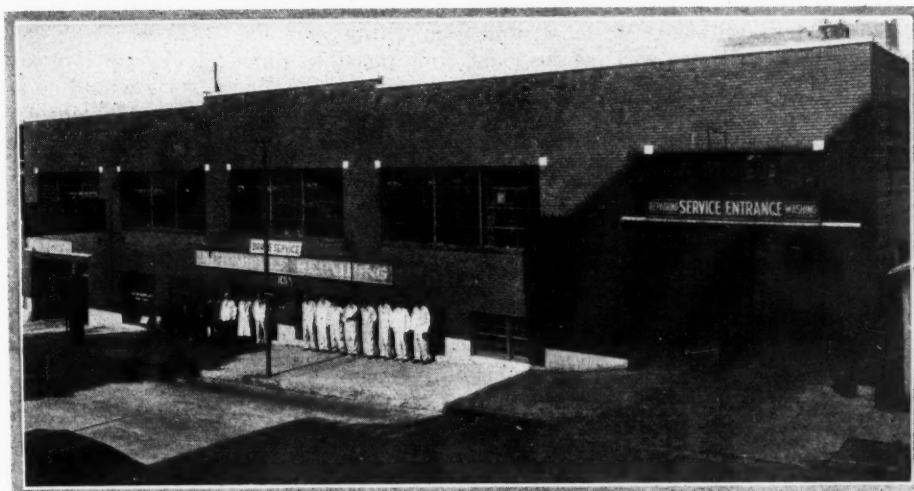
In the service department also, great precaution is taken to prevent misunderstandings. All cars are tested and their troubles carefully diagnosed, and a list of the items required made. These include both material and labor, and the cost of each is carefully entered. When this is completed the customer signs the slip, which is an order, and thus there can be no question arise concerning these items. If there is indication that additional work may be necessary to put the car in complete repair, the matter is fully discussed, the cost estimated, and the order secured to make the repairs if necessary.

A flat rate price system is in use in the service department, but the mechanic is paid on the hour basis. Mr. Arnold finds this most satisfactory to himself and the men. Each order is numbered, dated, and the customer's name, address, the make of the car and the mileage recorded. The original sheet of this order is taken to the office. The duplicate is placed in a leather envelope which has a celluloid face, allowing the order to be easily read by the mechanic without taking it out and soiling it with his hands.

When one of the six mechanics takes a job, he punches



George W. Arnold, president of the Automotive Trades Association, of Kansas City, and owner of Kansas City's Keystone Garage



Keystone Garage Building and Force. The grade from street makes possible the entrance of car to first floor (left) and second floor (right)

his time slip, completes the work which is assigned him, times out, signs his name on the slip, writes the order number on it, and makes notations of the work he has done.

If another mechanic also works on the same car, he does the same thing. Every item on the order is timed, the mechanic writing his name opposite the time used, in the column provided on the duplicate sheet. From these records the flat rates are computed. Once every six months

each operation is taken into consideration, all the data compiled, and the average actual cost is ascertained. Then the overhead cost is added, and the flat rate is fixed. When it is done Mr. Arnold knows he is not losing any money on the job, and that he is not overcharging his customers.

Mr. Arnold likes the plan of paying his mechanics by the hour rather than by the piece. He thinks that he is more likely to get the kind of service he insists on giving his customers by that plan for there is no temptation to the mechanic to rush the job at the expense of thoroughness.

Another reason why the hour plan is preferred is that in it there is no necessity to give a job to a certain man simply because it is his turn. The work in this shop is assigned to the man who is considered the best man to handle it, and this insures the best service it is possible to render.

Check Up Unproductive Time

There is always some non-productive time in every shop, and this is as systematically recorded as that spent on the jobs. This time is spent by the mechanic in keeping the tools of the shop in condition, and in cleaning up, etc.

A separate accounting is made for each department of the business—tires, oil and gas, accessories, shop and repairs, wash rack, storage, etc., and it is the determined policy of the management to make each one show a profit.

"The chief trouble with many garage men is that they do not know, and have no way of finding out just what it does cost them to do business in any department, and so they can go broke, and never know why," says Mr. Arnold.

To check up on the accounting system, and see that everything is absolutely O. K., a public accountant is employed to come once each month and verify what has been done.

Time-saving is one of the means by which the cost of service of all kinds is reduced. The front doors are opened by electricity. The accessories which workmen are likely to use are kept on both the first and second floors. The office, sales-room, work benches and everything else has been located so there will be the least time possible spent in going from one to the other.

There is no time lost in searching for tools. There is a white background against which they are hung up, and the outline of each tool is painted in black at the exact place where that particular tool is expected to be put away. Tools of the same kind are arranged according to size, thus making it easier to select the one needed. An assistant mechanic puts the tools in their places at regular intervals of the day, thus saving the time of the

regular mechanics. These and other labor-saving and time-saving devices make it possible for this garage to handle nine hundred repair jobs per month—an average of thirty-three per day.

It is demonstrated in this garage that it pays to have plenty of good tools—those made especially for doing the work that is required to be done. Mr. Arnold has made every effort to install the latest and best in equipment. His work benches are bolted to the floors and the walls, and each is equipped with a five-inch jaw-vise and good drawers for mechanic's tools.

Money in Good Tow Truck

A dependable tow truck is another big asset. They use a truck chassis equipped with a two-ton crane, a dolly and tools for emergency roadside work. Quite a little revenue is derived from towing in work for other garages which are not as well equipped.

The shops are wide open for the inspection of customers, and they are invited to inspect the work on their own cars as it proceeds if they so desire. This results in confidence, which has been one of the deciding factors in the battle for success.

"Confidence," says Mr. Arnold, "is our biggest asset. We work with that in view all the time, and with all our customers. I have seen a man drive into our garage for storage for the first time, and insist on putting his own car away. Then he locked it up so tight that nothing short of dynamite could open it without the proper keys. Then he looked over every tire, and walked around the car several times so he would have every item in mind. Realizing the attitude which many men had toward garage men, we said nothing but gave him the most courteous treatment possible. In a few days, he would entrust our men to put his car away and get it out for him. Then he would bring it in, and turn it over without locking it up, and after a while, he would not even look over the equipment to see if it was all there. It is because our customers count us worthy of their fullest trust and confidence that they come back and bring others with them."

Looks like a man with things coming his way in that style would be satisfied, but not so with George W. Arnold. He is a close student of the trade magazines, he takes every opportunity to confer with others as to better methods of doing things, he listens closely to the messages of the experts who address the meetings of the Kansas City dealers association, and he gets all sorts of pointers from his employees. All these things he uses to increase his own efficiency, and then passes them on to the members of the association of which he is president.

Flat Rates for Electrical Work

A flat rate chart covering electrical operations on automobiles will be published in the Nov. 5 issue of MOTOR AGE.

This chart has been compiled, after extensive research, by A. H. Packer, associate editor of MOTOR AGE and specialist in automotive electricity. Practically every repair and maintenance operation that the tradesman is called upon to perform in connection with the electrical system of an automobile is listed and priced in this comprehensive chart. All the leading makes of passenger cars are covered.

A large proportion of the service work required on the average automobile has to do with the electrical system. This chart makes it easy to determine prices to be charged for this work.

In Motor Age Out November 5, 1925

What Is a SMALL CAR?

*Judged by American Standards 90 Per
Cent of European Production Would
Fall in That Class*

By W. F. BRADLEY
European Correspondent of Motor Age

JUDGED by American standards, 90 per cent of European built automobiles are small cars, for the average piston displacement in the Old World does not exceed 130 cubic inches. The small car, according to European ideas, however, is one having a piston displacement not exceeding 67 cubic inches a wheelbase varying from 85 to 100 inches, a narrower track than standard, and generally a two or three seater open or closed body.

This type of automobile now has nothing in common with the so-called cycle car, which has failed to secure public favor. It is built up in accordance with standard automobile practice, the only technical difference, in certain cases, being the absence of a differential. Four cylinder water-cooled engines are used in every case, the transmission is generally of the three-speed variety, final drive is by standard type bevel or spiral gearing; and electric lighting and starting are included. Low pressure tires are invariably used, and in some cases the cars have four wheel brakes.

Unquestioned Commercial Success

The permanent commercial success of the small European car on its home market, and its growing importance abroad can no longer be doubted. It is responsible for the big increase in the number of cars in France, and several other Continental countries because it provides cheap individual transportation. In addition, in France 20 per cent of the sales are made to people who own a bigger automobile, but who find that a small car is more satisfactory for city service for the following reasons:

Higher average speed because of smaller overall dimensions; greater ease of parking; low gasoline, tire and taxation charges. With gasoline at 46 cents a gallon and state taxation at an increasing rate on a horsepower basis, it is advantageous, even when a big car is essential to supplement it with a small car which will run 40 miles to the gallon, and pays an annual tax of only \$12, compared with \$41 for an automobile having a piston displacement equivalent to that of the Ford.

Four makers, Citroen, Renault, Peugeot and Mathis are in big production of small two- and three-seater cars, and together are averaging about 250 cars per day. In addition to these firms, which figure prominently in both home and foreign business, there are at least one dozen in France producing on a small scale or specializing

Europe's Leading "Bantam" Makes

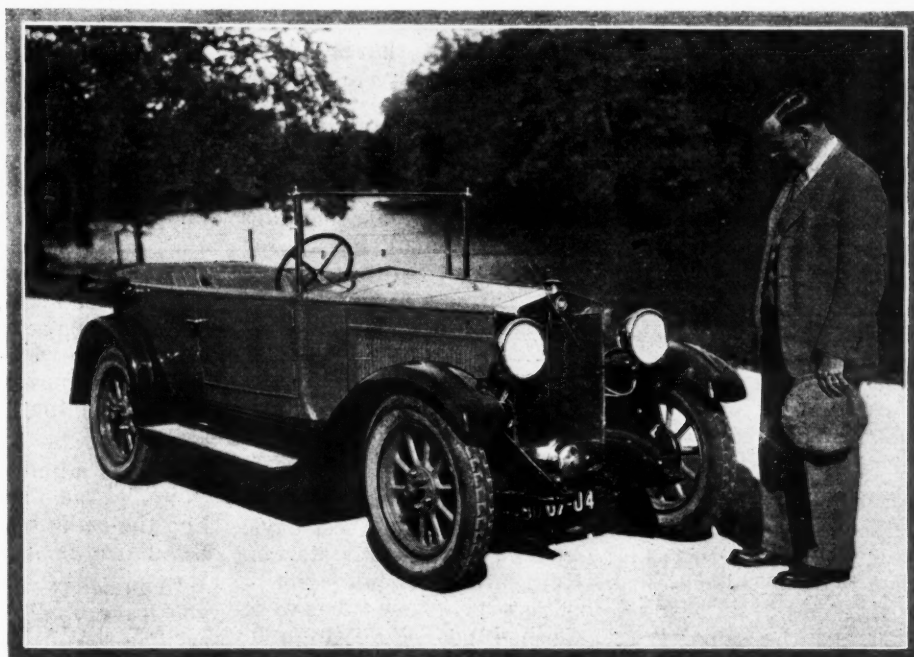
	Piston displace- ment Cu. Ins.	Track Ins.	Wheel- base Ins.	Tires	Brakes	Price
Citroen	52.2	46	88	715x115	T-R	\$590
Renault	58.	46	96	715x115	F-R	750
Peugeot	40.7	38	89	715x115	R	600
Mathis	60.7	46	108	715x115	R	645
Fiat	60.2	47	100	715x115	F-R	?

Prices include French 12 per cent luxury tax.

The above table does not attempt to cover all makes of small foreign cars, but merely those which are serious competitors for world's markets. Where price is indicated it is that of the cheapest type of body. The Fiat prices are not given, for these have not been determined for any other than the Italian market. It is believed, however, that the car will sell in competition with the leading French makes.

in a sporting type of small car. The above four are distinctive in producing a utility type of automobile.

As a proof of the permanency of this development, not only under European but under world conditions, the Fiat Company of Turin has also decided to produce a small car with an engine of 60.2 cubic inches piston displacement. A new six-story factory has been built and is now being equipped with modern machinery which will give the firm a capacity, from next January, on this model alone, of 200 cars per day. The problem of the small economical car has been under consideration for several years by the Fiat engineers, but their final decision has been in favor of a chassis capable of receiving a four seater body. By coming in after the commercial success of this type of automobile has been secured, Fiat has been able to secure a thoroughly up-to-date design which, with their big production methods will give them an advantage over other competitors and will make them dangerous against American cars on foreign markets.



Tommy Milton takes an interest in new 7 horsepower Fiat

Radio Set Trouble Shooting

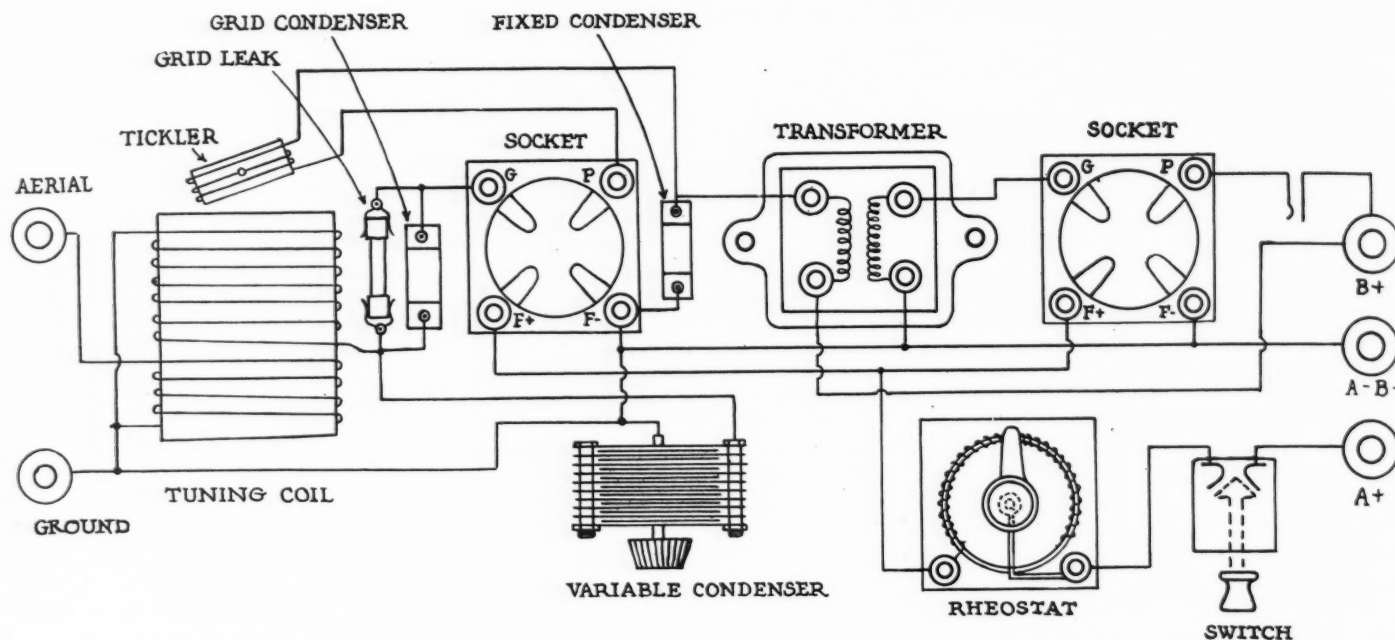


Fig. 1.—The radio diagram that Bill Fixit's men made from the set that Barney Oldfield Smith had discarded

The Red Head Shows How Some Electrical Tests Used on the Car Can Be Applied to the Circuits of a Receiving Set

By A. H. PACKER

FRIED frog legs and chicken the night before, feather beds to sleep on, pancakes with home made sausage and apple pie with real cream. What more could a couple of wandering trouble shooters want? And to make the Red Head and Valvy feel at home, Barney's mother spared no pains.

Valvy stretched and rose slowly from the breakfast table. "What time does the rural delivery fellow get here?" he wanted to know.

"Already gone by," said Barney, his manner showing his disappointment. "Guess we will have to wait another day for that condenser you ordered from Bill Fixit."

The Red Head was surprised. Of course something might have delayed the package in the mail, but as for Bill he entertained no doubts whatever, for promptness was Bill's first name. There was nothing to do about it, so the boys went out to the garage where Barney had his work shop. Barney showed Red and Valvy his equipment and tools and as they were about to go back to the house, Valvy's eye discovered a radio set, covered with dust and stowed away under the work bench.

"That looks like a good set; what's it doing there all covered with cobwebs?" he wanted to know.

"Looks—yes," said Barney, "but it's seen its best days. When I first got the thing I could get 'most any station. Then it went suddenly bad. New batteries would seem to fix it, then the set would be bad as ever. New tubes were tried and the same thing happened, so I gave it up in disgust."

Valvy was about to drag it out to take a look when

there was a sound of wheels on the gravel drive at the side of the house. The boys looked to see who it might be. Valvy stared in astonishment while the Red Head gave a low whistle of surprise.

It was Bill Fixit himself driving a new Runwell straight line eight.

"It was this way," said Bill when he had greeted his two men and been introduced to Barney. "Your wire came a little too late to have a package make the afternoon train and I had for some time been figuring on a run down this way to see our folks. Then I wanted to try out this new car, so decided to start last night, drive until midnight and turn up here in the morning. And here I am."

"Some service," said Barney. "Can I always get special delivery orders taken care of that way?" And Bill laughed. "We go a long way to take care of our customers," he said. "But we let Uncle Sam do the work most of the time. And now that you have your magneto condenser I will be running along. Red can do a job like that as well as I can."

"Just a minute," said Valvy, "I want to show you something." And Valvy dragged Bill to the garage and showed him the radio set, once a wonder, now discarded, and told Bill Barney's story.

"You fellows better show Barney what's wrong, before you leave him," said Bill. "It's a shame to have a good set like that discarded because of some little thing."

"Radio's deep stuff," said Red. "You have showed us fellows how to shoot trouble on cars but we never had

any dope on this. The Neutrodyne and Heterodyne and all the other dyne family have my goat and I haven't the faintest idea why the coils are placed in the sets in certain ways or why they need condensers."

"Do you know why some cars have two pole generators, why some armatures are wound one way and some another or why some commutators have 25 bars and others 33?" Bill wanted to know.

"Oh, that's different," said Red. "On the car you know the design is right and if you forget the details and just see that there are no opens, shorts or grounds, you can figure on the generator and starter working."

"Then why," said Bill, "Can't you do the same with a radio set. Barney told you it worked once. That shows the design must be right and if it gives trouble now it must be a case of shorts, opens or grounds, just as it is on the car."

"Well, I'll be," said Valvy, as he started to do a clog dance. "I'm a radio trouble shootin' expert and didn't know it."

"Better not hang out your shingle," advised Bill, "Until you have tried out your luck on at least one case. This one here seems to be a good one to start on, so I'll drive on now. We have started up a radio department back at Westville, so you fellows better make good now if you want to keep up with the procession. Just now it's a case of making sales, but before long we will have to call on the service department, and that means you and Red."

And leaving his men with something to think about, Bill got into the big car and drove away.

"Now look what you went an' done," said Red, the seriousness of the situation beginning to sink in. "Either we make good on radio trouble shootin' or its good-bye job. If Barney has no objections we will see what we can find wrong with his radio set."

"That sounds like more fun than fixin' the magneto," said Barney. "I haven't any place in particular to go with the car now, so we can fix up the magneto tomorrow, and if you find the trouble I'll have my good set back again."

Valvy was dusting off the cabinet in which the units were mounted. "Where shall we start?" he wanted to know.

"Making a diagram," said Red. "It's the thing we do first with an unknown car. We will take Bill's tip and work this job the same way."

It wasn't so hard after all, that diagram, after they made up their minds to tackle the problem. First the units were laid out in their relative positions. The transformer was shown in its position, then the two tubes, and the tuning coil, then the condensers, the grid leak and the variable condenser. After that the connections were traced and drawn and that much of the job was finished (Fig. 1).

Now Come the Tests

Next came the problem of tests to make.

"First the connections," said Red. "We will run from five to ten amperes through each connection to see that there are no high resistances or corroded contacts. Radio circuits in a set like this will not carry much current, but a poor connection would cause trouble just the same because its resistance is continually changing, which it would seem to me would cause funny noises."

"Funny noises is right," said Barney. "That's why I threw it out in disgust."

"Well, that's a clue," continued Red. "If you can scare up an old ammeter and some lamp bulbs we can start."

Barney thought a minute, then dug up a box of odds and ends and soon found enough bulbs to do for the test circuit. There didn't seem to be an ammeter lying around so Barney took the one from his Dad's car after Red and

BILL FIXIT STORY NO. 12

PREVIOUS installments in this series by A. H. Packer were published March 19, April 2, April 16, May 7, May 21, June 18, July 30, August 13, September 3 and September 24, 1925.

SYNOPSIS: Bill Fixit's electrical trouble shooting men start on a trip in a Speedway car. Then stop at various places along the way and in a mining community are robbed of all their money. This necessitates getting a job with the local electrician, to whom they give some helpful information gained in working in Bill Fixit's garage. Directional radio is used by government agents in locating a gang of crooks and the boys' money is recovered. The trip is continued and the night after leaving the mining town they stop with Barney Oldfield Smith, an amateur race driver and help him with a magneto job, where a new condenser is needed.

Valvy had checked the wires to make sure they could quickly get them back on the right terminals.

"Now," said Red, "We are ready to start. First we will connect the lamp bulbs in parallel and the string of lamps in series with our ammeter and battery. After that we will put the two spare ends of wire together and see how much current the lamps draw. That will be our par score and we will see if all the connections can make it."

When the test set was completed it was found that with three 21 c.p. bulbs the current was 7.3 amperes. The next step was to try the test on the radio set and the first circuit to be checked was the one from the ground terminal to the socket contact of the F— terminal of the detector tube (Test No. 1, Fig. 2).

Barney and Valvy were all eyes as they anxiously watched the ammeter reading, but it showed 7.3 as nearly as they could tell and did not waver. Then Valvy had a bright idea.

"Why not check off each wire in the diagram as we test it," he said. "Then we will make sure we test them all and do not skip any." The plan was approved and the checking process started and all connections were checked up and with the lamp and ammeter test appeared to be all right.

"How shall we check the rheostat?" said Valvy.

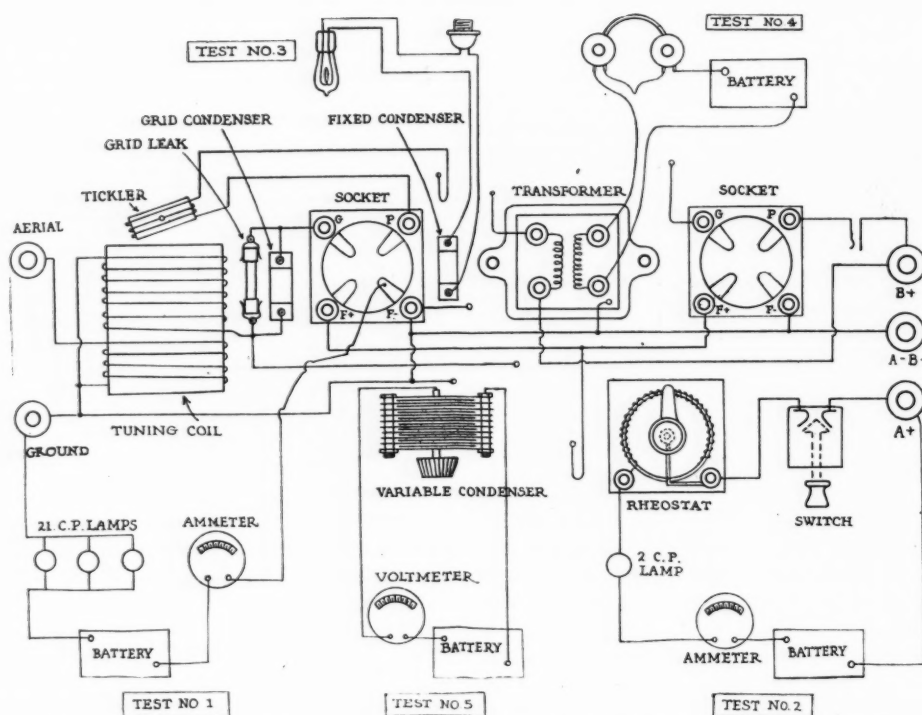
"The same way," answered Red, "Except we do not need as much current so we will use a 2 c.p. bulb (Test No. 2, Fig. 2), instead of the three big ones, and we will test the circuits to and from the rheostat with the heavier current."

The ammeter test proved to be a failure in checking the rheostat, for with but little current going through it, it failed to show a reading that could be depended on, so the boys watched the light vary as the rheostat was turned and as it did not appear to flicker they concluded there were no poor connections in the rheostat.

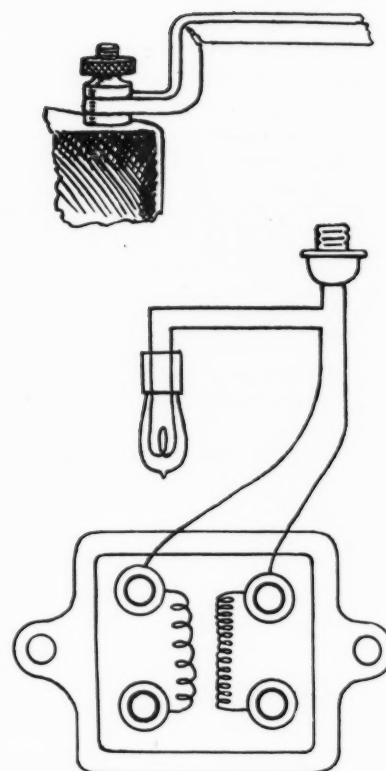
"We go to the 110 volt test next," said Red, "To see how the condensers are. If a 110 volt test checks 'em on a car it should here, so we will take the condensers and disconnect them; then see if the lamp lights up through them. If it does it shows the condenser is shorted and if not it is probably O.K. (Test No. 3, Fig. 2).

"If we had a voltmeter we could check with a battery, using the voltmeter in series with it to check either the fixed condensers or the variable one used in tuning (Test No. 5, Fig. 2). With a test of this kind we would expect to get no reading on the voltmeter as the condenser does not have any metal connection from one terminal to the other. However, if the plates touch at some point when turning the knob, we will have a connection, and the voltmeter needle will suddenly jump up and show battery voltage. If it shows a slight reading at any time it indicates a leak due to defective insulation.

"Barney does not seem to have a voltmeter so we will use the same 110 volt test, and if the lamp lights when we



Above: Fig. 2.—Five different tests that can be applied to a radio set in checking the different units and connections; Right: Fig. 3.—The 110 volt test used to check for a transformer with primary shorted to the secondary; Above: The cracked wire that was found with the battery, lamp and ammeter test



turn the knob to any position we will know the condenser is shorted in certain positions. That test also seemed to indicate nothing wrong with the set.

"And now for the transformer," said Red. "It's Greek to me as far as construction is concerned, but I know there should be two windings that do not touch each other. Therefore we should have two circuits which are unbroken and neither of these circuits should show a connection to the other or to the frame of the transformer.

"Something tells me that they use fine wire in these transformers and if this is the case we can not get enough current through to show on an ammeter. We might use a voltmeter and battery test (Test No. 5, Fig. 2), and if we did not we would get a reading through each circuit, which might not be the full battery voltage reading on account of the high resistance of the transformer winding, but it would show a connection. We would also expect to get a different voltmeter reading on the primary from what we get on the secondary, the latter being the lower.

Head Phones Used in Test

"Without a voltmeter we will fall back on a pair of head phones and connect them in series with a battery, then disconnect the wires from the transformer and see if we can get a click in the phones when we touch the two terminals of the secondary winding (Test No. 4, Fig. 2). We should get a click when the circuit is made or broken and the click in testing the primary should be stronger than the click obtained when testing the secondary.

"Then we can make the final test on the transformer to see that neither winding is grounded. In this test we put one wire on the frame of the transformer and touch the other wire to each of the four terminals, one at a time."

This test gave a very faint click and Valvy thought at first that this meant a defect in the transformer, but Red explained that the transformer had some condenser action as the frame acted as one plate of a condenser and either winding as the other, so that a faint click could be accounted for by the slight battery current which would flow to charge the transformer. To make sure,

however, Red decided to test the transformer with the 110 volt points. This was done and the lamp did not light up, with one point on the frame and the other at various terminals. The boys then concluded the transformer was O.K.

"Well, what next," said Barney as Red completed the last test. "We have tested thoroughly and so far have not found anything that would account for the trouble I had."

Red admitted he was stuck, but was interrupted by Valvy.

"Looka here once. In checking off on that first test we passed up one wire. It has no check mark on it."

"Oh, we checked it all right," said Red, beginning to get disgusted with the job. "But test it again if you want to."

Valvy said he would and hooked up the battery, lamp and ammeter test outfit. "We got it," he cried as the ammeter registered 7 amperes instead of the 7.3 value that had been checked as standard.

Red was skeptical. "Your battery's run down a bit, while we were making the other tests," said Red, but Valvy was vindicated, for even as they watched the meter needle, it began to quiver. Down it jumped to 6.8 then up to 7 again, then down to 6.4 and back to over 7.

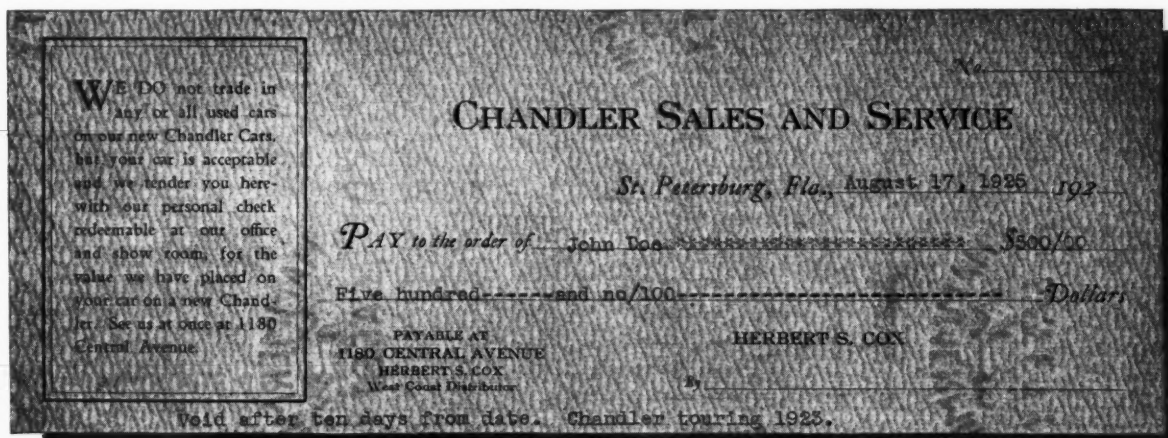
Problem Is Solved

Red began to get interested. "Let's take that wire off and look at it." "Well, I'll be," said Barney when the wire had been removed from the set. "A square bit of bus bar, bent at a sharp angle and cracked at the bend. Notice, too, how the crack comes up from the bottom and does not show at the top of the wire. You'd never in the world find a thing like that without testing unless you tore the whole set apart and built it all over.

"It sure was a mystery why it went bad all of a sudden. That wire must have been badly strained by too sharp a bend when the set was built, and gradually the crack spread nearly through. But it isn't quite such a mystery, after you know the answer, is it?"

And Red and Valvy merely grinned.

Check System Aids Used Car Sales



Specimen check used by Florida dealer to boost business

HERBERT S. COX has devised a check system the use of which has been of aid to him in the handling of both used and new Chandler cars at St. Petersburg, Fla. Mr. Cox is Chandler distributor for Florida's west coast.

The system used in distributing these forms is a simple one, according to Mr. Cox. "Our salesmen upon seeing an old car make the appraisal, fill in the check and either wait for the owner or attach it to the steering wheel of the car in question," he said. "Besides this we have of course a list of all automobile owners in and around the county and we use the mails to transmit the checks.

"The result obtained from the use of these checks has been excellent. A number of inquiries have resulted from their use and the writer knows of two new car sales made recently which can be traced directly to the use of this form of advertising.

"The used car problem here is, I presume, the same as it is all over the country. We are using the Blue Book as a standard for our used car values enabling us to show a prospective used car purchaser that he is getting full value for his money. Where the selling price of the car is not too high, that is not in excess of \$500, we take as little as \$100 in cash as a first payment for such balance as will not be handled by the finance companies.

"The efficiency of the method of merchandising our used cars is evidenced by the fact that we have been located here for less than two months yet every used car we have taken in, with the exception of three, have been sold. When we first started this system the results were remarkable. In nine days time we sold ten used cars; in the next succeeding five days we sold seven, which speaks for itself.

"Necessarily we use classified and display advertising for this department of our business, which no doubt is a contributing factor to the sale of used cars."

Taking Shop Equipment to the Buyer

AN extensive line of automotive shop equipment is carried direct to dealers, service stations and garages in the territory of the Southern Hardware & Woodstock Co., of New Orleans, by a special truck equipped and operated by this company. This method of displaying and demonstrating shop equipment was first tried by the Southern Hardware & Woodstock Co. last year and the results were so satisfactory that the truck was rebuilt and re-equipped to go into the field again this year.

The tools carried on the truck include:
Weaver 32 in. press with all attachments.

Weaver tire changer.

Curtis air compressor, complete.

Garco-Fleming brake lining machine.

Storm reborning outfit.

Black & Decker twist drill grinder.

Storm connecting rod aligner.

Sioux valve refacer.

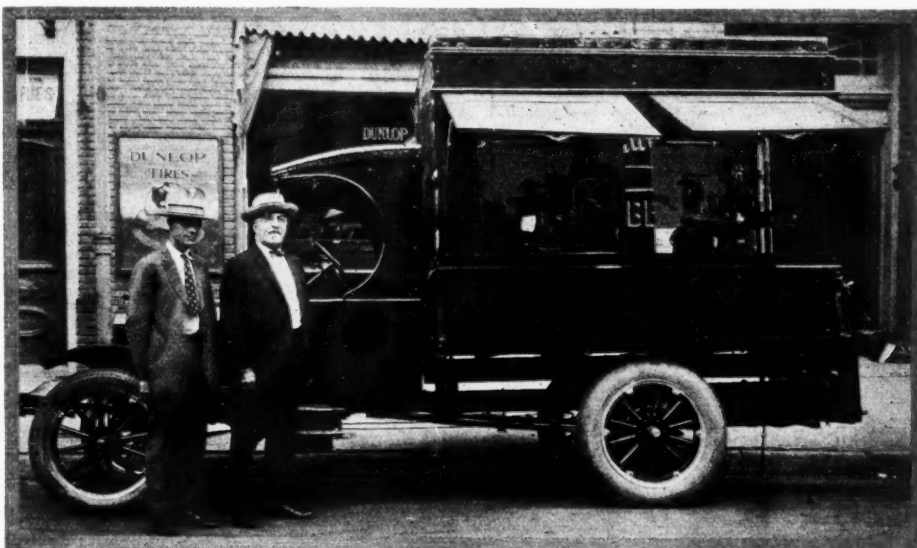
Ames dial gage.

Black & Decker valve grinder and 1/4 in. and 1/2 in. drills.

Storm hone.

Fleming flat rate kit.

National tools including all types of pullers for Chevrolets and Fords.



Shop equipment truck operated by Southern Hardware & Woodstock Co. L. M. Wolf, president of the company, and Richards Hinds are standing beside the truck

Rego welding outfit.

Greenfield screw plates.

Bethlehem sockets.

Micrometers.

The truck is in charge of Richard Hinds

and each week he is accompanied by a factory man representing one of the lines of tools carried on the truck. The truck is expected to cover the territory in about 10 weeks.

HOW TO ADJUST BRAKES

Points That Must be Observed in Connection With the Maintenance of Mechanically Operated Four Wheel Brakes. In Which the Buick System Is Taken as an Example

By B. M. IKERT

(The second of a series of articles dealing with conventional rear wheel, mechanical four wheel and hydraulic four wheel brakes)

THE proper adjustment of mechanically operated four wheel brakes offers no special difficulties, if the mechanic understands the fundamentals of adjusting the conventional rear wheel brakes.

In last week's issue of MOTOR AGE was given the methods that should be followed in the adjustment of the latter type brakes and much of what was said there applies equally well to mechanically operated four wheel brakes.

In order to make the matter more readily understood we have chosen in this article the four wheel brakes as applied to the Buick car. Different forms of mechanically operated brakes require different adjustments, naturally, but in the main, much of what follows here applies to all brakes of the external type. It is just as essential that levers and rods come to the stops provided when the brakes are in the off position in one car as in another of different make. Hence with certain modifications the following will apply in a great many cases.

Information pertaining to other forms of mechanically operated brakes, such as the internal type, three—shoe type, etc., will be published in a following issue.

There are four important things to observe in the ad-

justing of the Buick four wheel brakes and before any work is attempted they should be checked. They are referred to in Fig. 1 and include,

1—The foot pedal being the unit which operates the system should be checked for clearance. There should be $\frac{3}{16}$ in. between it and the floor board and the pedal should have a 5 in. travel.

2—The levers must come all the way back against their respective stops. In Fig. 1, the rear brake lever O must rest so the stop A is against the bracket on the brake camshaft in back of it. Also, lever E, in the middle of the car frame on the right side must rest fully against its stop.

3—The equalizer bar must at all times be parallel to the brake cross shaft above it and this applies with the brakes in the on as well as off position.

4—There must be a uniform clearance of $\frac{1}{32}$ in. around the brake band.

If a complete adjustment is required the following is necessary:

First of all place the car on jacks so all four wheels are off the ground.

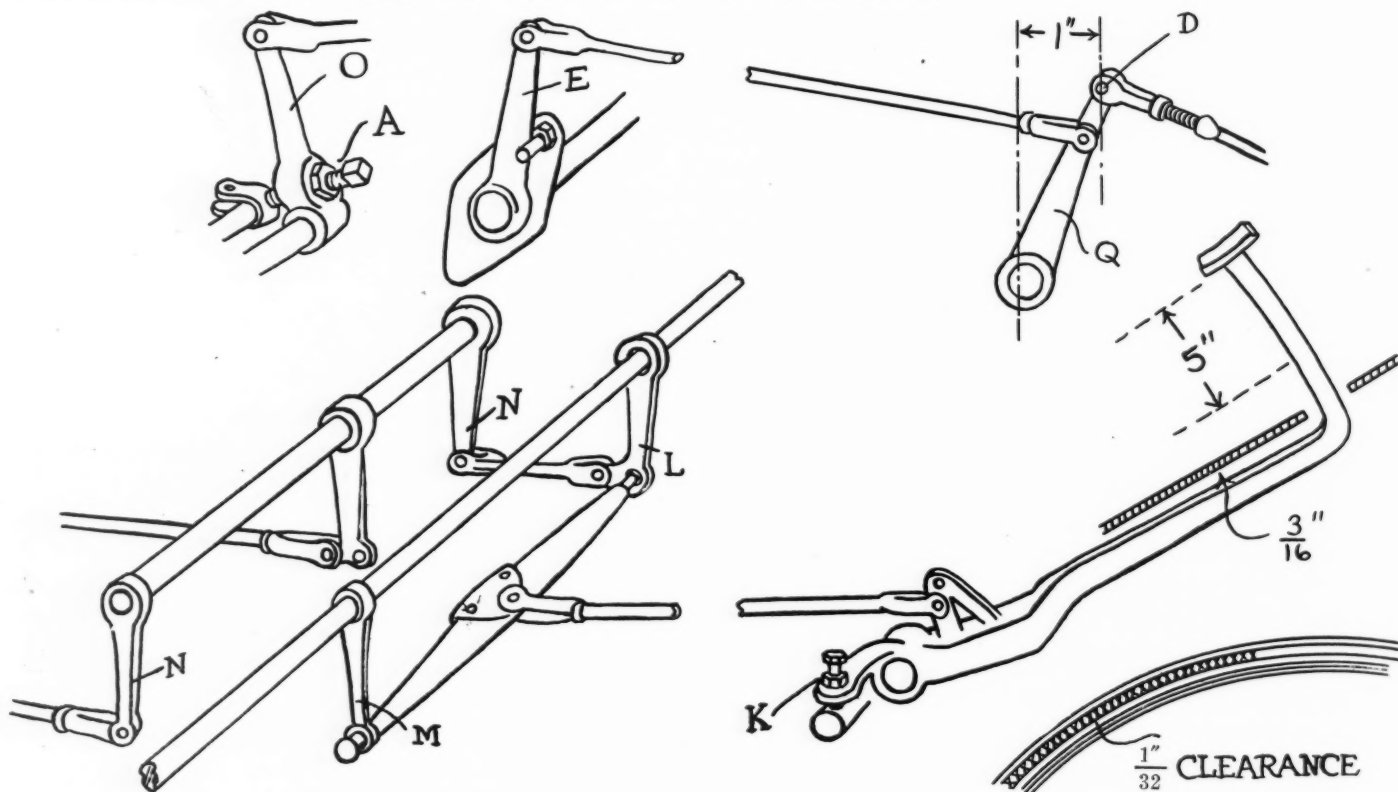


Fig. 1. Four of the chief things which must be observed in the adjusting of the brakes used on the Buick models. The levers must come all the way back to their stops when the brakes are released. The equalizer must be parallel to the cross shaft at all times and the pedal must have the required clearance, as shown. In addition the clearance between the lining and drum must be $\frac{1}{32}$ in.

Next all of the working parts should be thoroughly lubricated. Then all of the working parts should be tested to see that the joints work freely and that the shafts operate properly. See that the foot pedal has the proper clearance.

Inspect the lever O in Fig. 1 to see that it comes back against the stop shown at A. The stop should bear against the clamp B on the hand brake camshaft and the correct setting will bring the pin B, Fig. 3, in line with the center line of the adjusting rod C, Fig. 3. The stops for the front brakes are located inside the drum and are non-adjustable. However, the front brakes can be tested to see if they return to the full release position by disconnecting the pin D, Fig. 1, and working the brakes by hand, letting them snap back into the release position. The lever E also should return to its stop.

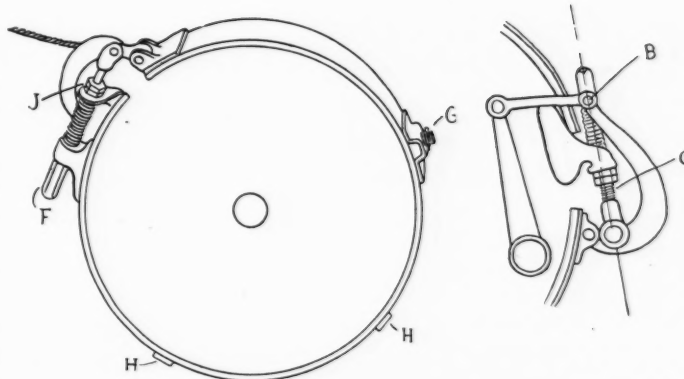
In order to get the correct setting of the equalizer bar, that is, to have it parallel at all times to the supporting shaft when the brakes are in the On or Off position, release the right front and rear brakes by turning the adjusting nuts F, Fig. 2.

Then obtain the correct pedal travel, which should be about 5 in. and also a square pulling movement of the equalizer bar by turning the adjusting nuts F at the left front and rear brakes. Then adjust the right front and rear brakes by turning the adjusting nuts so the right and left brakes in each set hold alike. After this the adjusting nuts F should not be turned, as it will affect the holding of the brakes.

The next step is to get a clearance of approximately $1/32$ of an inch between the brake band lining and drum. To do this, adjust the anchor pin G so that when the wheel is revolved the lining just clears the drum at this point. Then adjust the brake band guides H on the upper side of the rear brakes and lower side of the front brakes of each band. There are two small hexagon nuts for this, one being the adjusting nut and the other the lock nut. Next turn the adjusting nuts J, Fig. 2, after which the wheels should be revolved and the clearance of the bands tested with a feeler gage.

It is very essential, in doing this that the brake bands be round and if flat spots are found they should be removed by means of a brake band rounding tool in connection with the feeler gage. Do not use a screwdriver for this because being a wedge shaped instrument it will not round the band uniformly.

Incidentally it is a good thing to mention here that in all cases where adjustments are made by turning hexagon



Left: Fig. 2. Layout of the brake band mechanism of the Buick, showing where the adjustments for clearance are made. The anchor pin adjustment, G, is first made after which the brake band guides, H, are adjusted. Finally the adjusting nuts, J, are turned to secure uniform clearance around the band; right: Fig. 3—Diagram showing the position of the rear brake lever when the brakes are released. The pin, B, should coincide with a line drawn through the center of the adjusting rod, C

nuts to use proper wrenches instead of pliers. Adjustment of brakes is much like valve tappet adjustment since it is necessary to properly lock the adjustment once it has been made, and to do this a pair of wrenches are used.

Sometimes the above adjustments cannot be had by adjusting at the bands only and when that condition exists it is a good thing to check the brake operating rods and cables for correct length. In order to do this proceed as follows:

Make sure that the lever E rests against its stop with the brakes in the off position.

Next, get the proper position for the brake pedal and to do this, remove the pin from the yoke at the rear end of the rod and adjust the pedal by turning in or out on the screw K. The proper clearance is $3/16$ of an inch between the foot board and pedal.

The next step is to check the rear rods and levers. Lever L must be parallel to lever M. If it is not, remove the pins from the adjusting yoke ends of the levers N and with levers C and E against the stops turn the yoke ends so that the holes in the levers and yoke ends are in a line. This will insure the equalizer bar being parallel to the brake cross-shaft.

With lever E resting against its stop and lever L hanging straight downward, equalizer parallel to its supporting shaft, turn the adjusting yoke so that the holes in it and the center hole in the equalizer bar are in alignment. Then replace the pin. This will adjust the brake pedal rod and the rod should be just short enough to take up any looseness between the equalizer bar and levers L and M.

In order to check the front rods and levers see that the lever E rests against its stop. The front pull rod should be of such length that the center of the upper pin in the lever Q, Fig. 1 is 1 in. ahead of a vertical line drawn through the center of the bolt retaining the lever. This is also shown in Fig. 1.

Finally the cables should be checked for length. In order to do this, turn the front wheels to the extreme right position and adjust the cable on the right side so the pin D can be replaced with the fingers. This naturally must be done with the brakes released and the lever E and the front brake lever against their stop positions. The left cable should be adjusted in a like manner with the wheels, of course, turned in the extreme left position.

In testing a car after making this adjustment the usual procedure is to drive the car forward and locking the rear wheel brakes and running it backward to lock the front brakes.

Before Doing the Work

IN checking up some of the difficulties which mechanics have with the adjustment of mechanical four wheel brake mechanisms we find almost always these difficulties are due to not freeing up the system properly before any attempt is made at adjustment.

In mechanically operated brakes there are numerous yoke ends, clevis pins and levers which must work freely before the brakes can be adjusted.

Oftentimes owners are careless about the lubrication of these points and when a car comes in for brake adjustment the mechanic should always make sure that everything works as it should. To do this he should disconnect the rods or cables and allow the brakes to snap back to see if they release properly. It also allows him to check up on the operating rods and levers.

Star Six Furnished in Three Body Models

Some Features of the Four Cylinder Model Found in Six. Wheelbase Is 106 in. And Engine Is of L-Head Design. Car Has Low-Hung Appearance

By DONALD BLANCHARD

SHIPMENTS of the new Star Six are now being made to zone offices and deliveries to distributors and dealers will start shortly. For the present, only coach, coupe and coupster bodies are being offered on the new chassis and prices on these models have not been announced.

The wheelbase of the new chassis is 107 in. and its L-head engine has a bore of $2\frac{3}{4}$ in. and a stroke of $4\frac{1}{4}$ in. giving it a piston displacement of 169.3 cu. in. Although the rated horsepower is 18.15, the actual output is said to be 40 h. p. at 2400 r. p. m. and the torque at 800 r. p. m. is given as 100 lb. ft. In view of the fact that the weight of the coach model is but 2375 lbs. the performance of this new car should be unusually good.

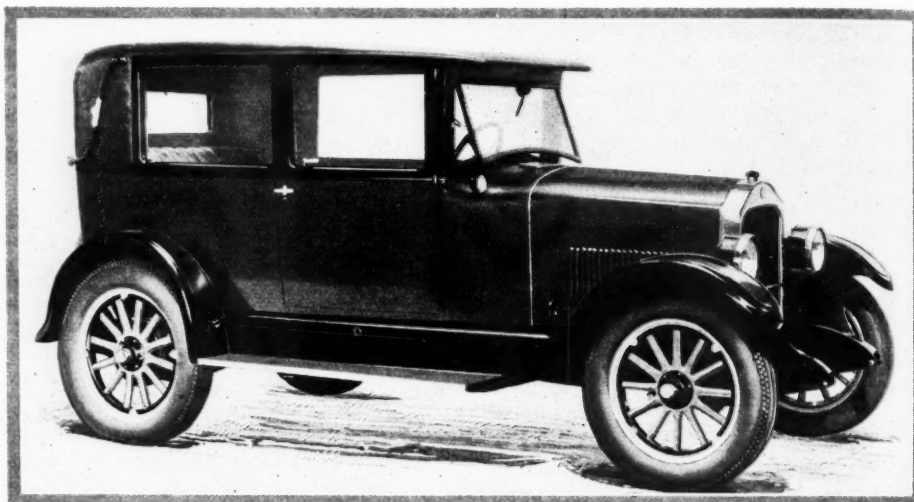
Some of the features of the present Star Four are found in the Six but in a number of respects the new job is quite different. The "tubular backbone" construction is not employed and the frame side rails have a kick-up over the rear axle. The latter feature together with a drop-center front axle reduces the height of the chassis and contributes to the low-hung appearance of the cars.

The characteristic Star radiator is retained in the six but the appearance of the various models has been greatly improved by reductions in the overall height which give them the long, low appearance so popular at the present time. In addition, the stream lining is better and the integral sun visors furnished on the closed models add to their general appearance.

Bodies are built by the Hayes-Hunt Corp. and are finished in sage brush green lacquer with black tops and fenders. In the coach, which has nickel trimmed landau irons at the rear quarters, the folding seat has a hinged mounting which permits its being swung towards the driver thus providing ample space for entrance to or exit from the rear seat. An unusual amount of leg room, particularly for the rear seat passengers, is provided in this model. Standard equipment includes automatic windshield wipers, rear view mirror, cowl lights and usual instruments. Hayes wooden wheels with natural finish are used on all models, 29x4.40 tires are used on the coupe and coupster, while the coach is equipped with 30x4.95 tires.

The engine is a Continental model 14-L supported at four points by feet cast on the crankcase. The forward supports consist of malleable brackets which are secured to the frame side rails and to the frame cross member which carries the radiator. At the rear, the engine is supported by the second cross member.

The cylinder block and crankcase are



Star Six Coach one of the three body models of the latest car produced by Durant Motors, Inc. Rearrangement of the transmission affords more leg room than in the four

cast integral and the latter is carried down $2\frac{1}{2}$ in. below the center line of the crankshaft for stiffness. The Oil pan and timing cover are of pressed steel while the detachable cylinder head is of cast iron. The compression ratio is 4.95 to 1.

Four main bearings support the crankshaft, the upper halves being die-castings and the lower halves babbitted in the caps. They are all $2\frac{1}{4}$ in. in diameter and have the following lengths from front to rear respectively: $1\frac{1}{4}$, $1\frac{1}{8}$, $1\frac{1}{8}$ and $1\frac{1}{8}$ in. The connecting rods are 9 in. in length and have babbitted-in-place big end bearings, 2 in. in diameter and $1\frac{1}{2}$ in. long. Laminated shims are used to fit the caps.

Pistons are cast iron with three $\frac{3}{8}$ in. rings all located above the pin. The lower ring is an oil scraper type and relief holes are drilled in the piston. The piston pin has its bearing in a bushing in the rod and is secured in the piston by a set screw and snap rings. Dimensions of this part are $47/64$ in. diameter and $2\frac{21}{64}$ in. in length.

Front End Drive

Front end drive is by a Morse chain $1\frac{1}{4}$ in. wide with 81 links and a .40 in. pitch. It has a conventional triangular layout passing over sprockets on the crank, cam and generator shafts. Tension adjustment is effected by moving the generator which has slots in its supporting flange through which the mounting bolts pass.

Cooling water is circulated by a centrifugal pump which is driven through a rubber hose coupling from the rear end of the generator. The pump differs from that use on the Star Four in that it has two bearings, one on each side of

the impellor, and each lubricated by a grease cup. A bracket, which also serves as the water inlet to the jacket, supports the pump from the side of the cylinder block near the rear on the left side.

The cooling fan is driven by a flat, endless belt from a pulley on the forward end of the crankshaft. Adjustment for belt tension is the same as on the Star Four except that the slot in which the rear end of the fanshaft clamps, is open at the top thus facilitating removal of the assembly. Lubrication of the fan bearing is provided for by a reservoir, the bearing at this point being the cast iron hub on the hardened steel shaft. The radiator is a Fedders honeycomb and the capacity of the cooling system is 3 gal.

The camshaft is carried in four bearings which have the following dimensions, diameters and lengths, from front to rear respectively: $1\frac{1}{8} \times 1\frac{1}{8}$ in., $1\frac{1}{8} \times 1\frac{1}{8}$, $1\frac{1}{8} \times 1\frac{1}{8}$ and $1\frac{1}{8} \times 1\frac{1}{8}$ in. The valves are operated through round nose tappets which are mounted in blocks of four, each pair being restrained by a spring and plunger arrangement similar to that employed on the Four. Both inlet and exhaust valves have nickel steel heads, the nominal diameter of the former being $1\frac{1}{8}$ and of the latter $1\frac{1}{4}$ in. The lift is $\frac{1}{8}$ in. and the valve spring pressure is $77\frac{1}{2}$ lbs.

Engine lubrication is by pressure feed to main, connecting rod, camshaft bearings and to the timing chain. The oil pump is mounted on the left side of the crankcase with its shaft horizontal and is driven through helical gears from the camshaft. It has the pressure relief valve incorporated with it and as the

valve is readily accessible in this position, the oil pressure adjustment is changed by substituting a stronger or weaker spring as the case may require. The lubricant is distributed through tubing to each of the main bearings and thence through the drilled crankshaft to the crankpins. Ducts drilled in the crankcase webs provide for the camshaft bearings.

The fuel system comprises an 11½ gal. tank at the rear of the chassis, a Stewart vacuum system and a Tilletson 1-in. carbureter. Intake and exhaust manifolds are cast integrally and the former has a heating jacket.

Generator, starter, cutout, coil and distributor are all of Auto-Lite make and the battery is a USL. The generator is a third brush unit and carries the distributor, coil and cutout. The starter is strap mounted on the right side of the engine and has an outboard Bendix drive. The lighting and ignition switch is a Clum.

Durant practice is followed in the design of the single plate clutch. The facing material is compressed asbestos, the rings having inside and outside diameters of 6½ and 9½ in. respectively and a thickness of ⅜ in.

Between the clutch and the amidships mounted transmission there is a Spicer universal of novel construction. In it, sixteen rubber balls are used to provide the necessary flexibility. There are two, four-pointed spiders, one a spline fit on the clutch shaft and the other on the transmission shaft. Between each of the points of these spiders there are two rubber balls which are held in position by triangular spacers which in turn are bolted to a channel section ring located between the two spiders. Pressed steel covers are provided for the assembly.

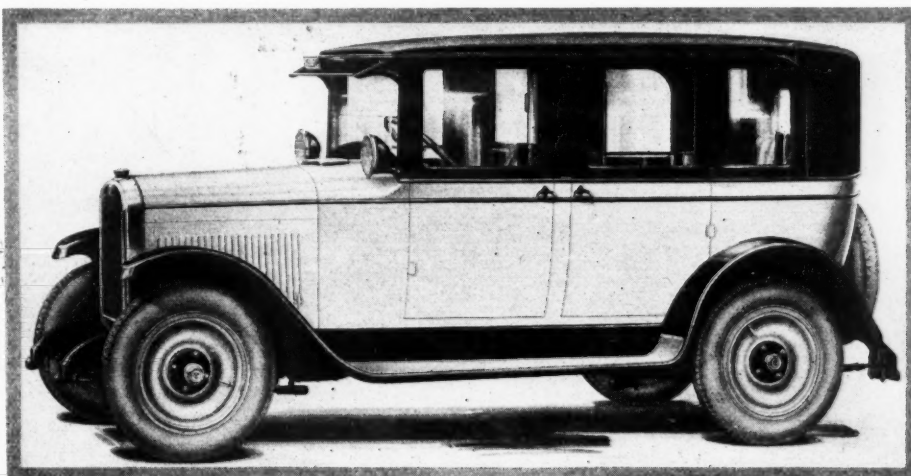
The transmission is a three-speed unit providing reductions of 3.32 to 1 in first, 1.77 to 1 in second, direct in third and 4.3 to 1 in reverse. Except for the fact the cover plate is designed so that the center of the ball on the gear shift lever is about 6 in. forward of the neutral position of the shifter forks, the transmission is conventional. By bringing the gearshifter forward in this way it has been placed in a more convenient position for the driver. The mainshaft is supported in ball bearings and the countershaft and reverse idler in bronze bushings.

Transmission Mounting Different

The mounting of the transmission differs greatly from that used in the Star Four. In the new six, it is supported in a sub-frame consisting of two longitudinal members between the second and third frame cross-members. Its forward end is carried by a cross-member connecting the two longitudinal members while at the rear, a bracket bolted to the third frame cross-member supports the load.

Power is transmitted to the rear axle through a tubular propeller shaft with Spicer universals at each end. While conventional practice is followed in the rear axle, it is an entirely new semi-

New Limousine Type Yellow Cab With Knight Engine



The Mile Merchant model Yellow cab powered with a 4 cylinder Yellow Knight sleeve valve engine

MAJOR changes incorporated in the new type O-5 Yellow cab, which is known as the "Mile Merchant" model, are a fully enclosed driver's compartment, giving the vehicle the appearance of a sedan; and a larger, roomier passenger compartment seating 6 persons. It is powered with a 4-cylinder Yellow Knight Sleeve Valve Engine, manufactured in the

company's own plant at East Moline, Ill. The wheelbase has been increased from 109 in. to 114 in., although the turning radius remains the same. Rubber shock insulators, adopted more than two years ago, are retained in the O-5. Other improvements include balloon tires, air cleaner and throttle controlled oil pressure.

floating unit and has the two-piece, built-up type of housing. The helical reduction gears, which have a 1-in. face width, provide a reduction of 4.87 to 1. Two Timken bearings support the pinion-shaft in a carrier which bolts to the differential housing, shims being provided at the joints for adjustment. The two-pinion differential is carried in ball bearings and the outer ends of the axle shafts in Timkens.

The service brakes act externally and the emergency internally on 11-in. drums at the rear wheels. On the external brake, the operating links are located above and behind the center of the axle, the brake hand lever extending downward and the rod which operates it, passing under the axle. Two pieces of Thermoid lining, each 14½ in. long by 2 in. wide with a ⅝ in. thickness, the lining being cut away for a short distance on either side of the anchor which is located at the center of the band. The internal brake is cam operated and takes a single piece of lining 31 in. long, 1¾ in. wide and ⅝ in. thick.

Links connect the brake pedal and hand brake lever respectively to short levers on two cross shafts. These shafts extend through the frame side rails and short levers on outer end are connected by rods to the operating levers at the rear wheels. Equalization of braking is obtained by clearance adjustment.

Semi-elliptic springs are used front and rear. The rear springs, which take the torque and propulsion reactions, are

underslung, have nine leaves and lengths and widths of 53¾ and 1¾ in. respectively. The front springs also have nine leaves and are 1¾ in. in width, but the length is 35¾ in. Spring eye bushings are hardened steel and the bolts are ⅝ in. in diameter and 1¾ in. long.

The front axle is a reverse Elliot drop-forging of I-beam section with a drop center. The king pin and tie-rod bearings are bronze bushings and the thrust at the pivots is taken by steel washers. A worm and wheel steering gear, with a 8 to 1 reduction and similar in design to that used on the Four, is employed and it is supported by the left front engine mounting bracket.

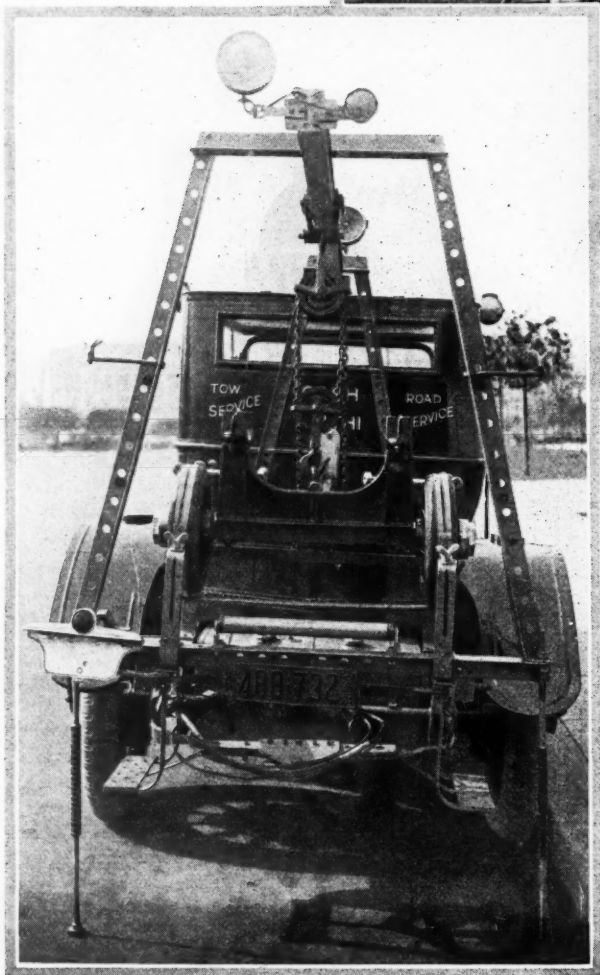
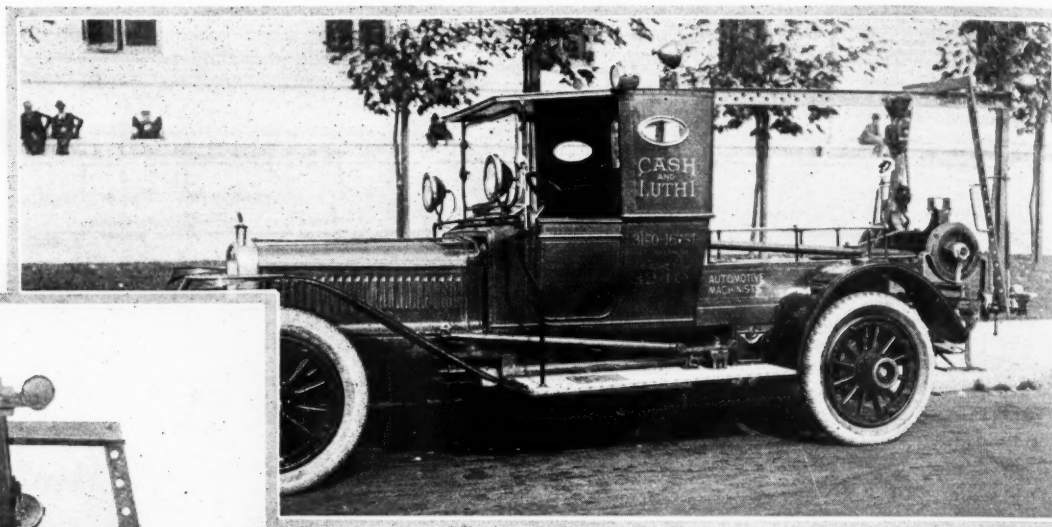
In addition to the cross-members supporting the engine and the rear end of the transmission there is a cross-brace at the front rear spring hanger and another in the form of a wide plate over the gas tank at the rear. The frame side rails have a depth of 4½ in. a flange width and a thickness of ⅝ in.

Hudson and Essex Prices On Closed Models Reduced

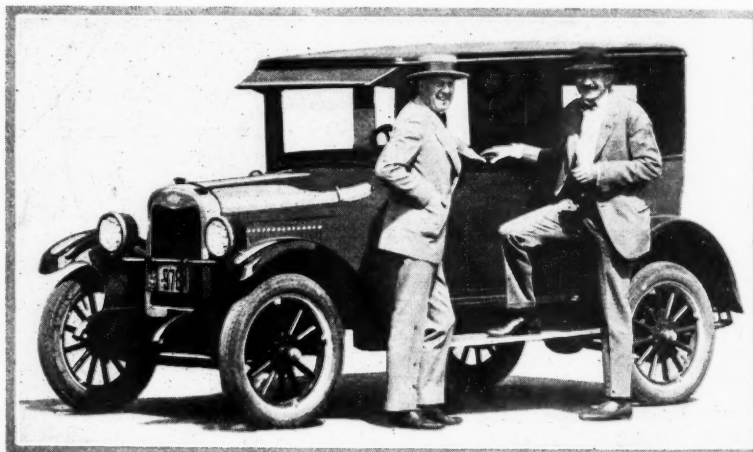
DETROIT, Oct. 19. — Announcement was made here today of the following price reductions on Hudson and Essex models:

Essex Coach	\$30
Hudson Coach	30
Hudson Brougham and Sedan.....	45

MOTOR AGE'S PICTURE PAGES



TRUCK CARRIES COMPLETE WRECKING EQUIPMENT: It has two towing dollies, two wrecking jacks, and a universal one-man tow bar, all manufactured by Kimmerly Bros. of San Francisco, whose salesmen use it in calling on garages and other possible prospects. Wrecks can be raised without the use of jacks. When so used two rods extend from the rear of the car frame to the street, which take the strain off the wrecking car.

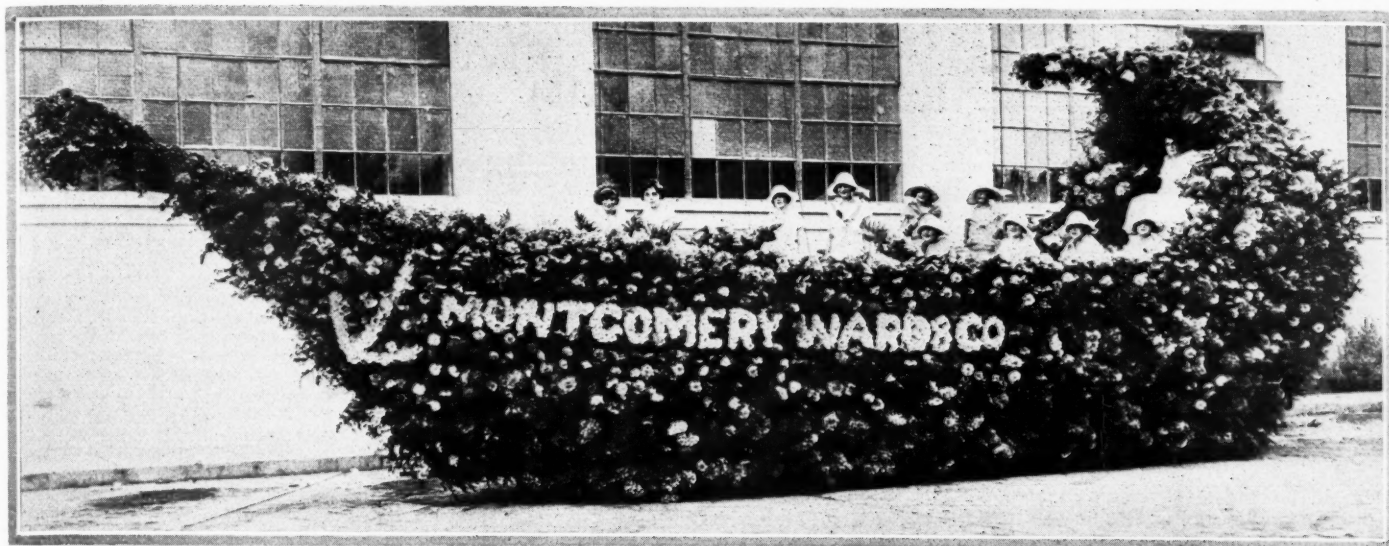


A PRODUCTION RECORD. Here is shown the two-millionth Chevrolet, built Sept. 8. The company is the first maker of selective gear shift cars to attain this production. The first "Baby Grand" touring model was turned out at the Flint plant in 1913.



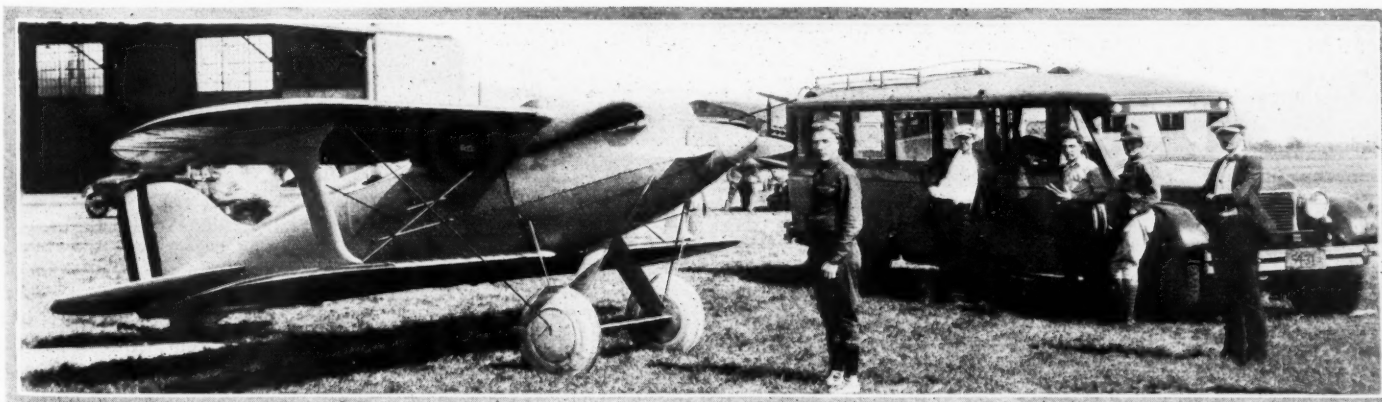
TRANSPORTATION EVOLUTION. At the left is an ox team and Ezra Meeker, who blazed the Oregon trail in 1852. At the rear is an original stage coach of the "Deadwood Dick" era; in front and at the right we have an original curved dash Oldsmobile, the first automobile made commercially in the United States and at the extreme right Mr. and Mrs. F. M. Richards who are driving a modern Oldsmobile around the world.

OF AUTOMOTIVE INTEREST



INCOGNITO. The Republic truck above, heavily camouflaged with beautiful flowers—and beautiful maidens—won first prize as the entry of Montgomery Ward & Co. in the Dons of Peralta parade at Oakland, Cal.

SAYING IT WITH MUSIC. To advertise the new Diana, Casperson & Snyder of Salt Lake City, Utah, organized an orchestra which holds forth at regular intervals to the enjoyment of its audience.



A SPEEDY VEHICLE. Lieut. Cyrus Bettis, U. S. A., is shown beside the Curtis "bullet" plane which recently established a speed record of 302.8 miles an hour. The plane is only 20 ft. wide from tip to tip. A new model Mack parlor car is shown in the background.

The READERS' CLEARING HOUSE

Questions and Answers on Dealers' Problems

**BUILDING - ELECTRICAL - FLAT RATES
SHOP - LEGAL - PAINT & TRIM - ACCOUNTING**

Let's Blame It on Kinetic Energy

Q.—We would appreciate your advising us of a curative to "shimmying" on a 1924 Chrysler six roadster. We have been servicing this car throughout its career and have been unable to overcome such action as above. This shimmy commences on slightly rough roads at 50 miles per hour increasing to its worst at 55, then leaving gradually within the next 3 mile per hour increase in speed. Suggestive cures by manufacturers have been unavailing. Wisconsin Shimmier.

About the only thing uniformly admitted regarding shimmying is that it is a form of kinetic energy producing periodic vibration in certain parts of the steering system at certain road speeds. Generally speaking it can be eliminated or at least alleviated by removing all lost motion in the steering system and spring layout. This includes tightening all spring shackle bolts or rebushing them if necessary, tightening all spring U bolts, axle king bolts, spindle arms and tie rod connections. In some cases balancing the front wheels so that each will remain stationary when jacked up and stopped will cure the trouble. In other cases wheel balance seems to have no effect whatsoever. The local maintenance organization handling Chrysler in this city advise that the tie rod assembly be removed and that the left hand end ball and cup assembly be removed. With this removed the spring should be cut off about $\frac{1}{8}$ of an inch so as to give the tie rod floating bushing one-quarter of an inch overlap instead of the $\frac{1}{2}$ which is regular when the car comes from the factory.

Above all things we would recommend a thorough tightening of all parts of the steering system, springs and front axle, as before stated including the spring clips, steering arm of the steering gear and the ball end of this same arm, also shock absorbers and spring clips. It might be that experiment with the inflation pressure in the tires will enable you to change the period so that it will occur higher up in the speed range. Off hand we would be inclined to believe that an increase in the pressure would tend to place the period farther along in the speed range. The factory recommendation is that the tires on the open models be inflated with not less than 35 pounds and it is our suggestion that you experiment with pressures from 35 down to 32 and up to 45 pounds.

We have known of some cases of wheel shimmy that have been cured by removing the spring from one end of the drag link and also from one end of the tie rod or connecting rod. As a last resort

to be used only in case that other suggestions do not produce results, you might try changing the castor angle of the front axle. This of course, can be accomplished by inserting sheet metal wedges between the spring seats and bottom of springs on the axle.

LEAVE THE COUNTER-WEIGHTS

Q.—Is it advisable to remove the counter-weights from Essex crankshaft in order to get the pistons out from below. —G. & J. Stromer, East Main Street, Gillett, Wis.

No, if the counter-weights are removed the balance will not be perfect when they are put back again. In the Clearing House section under date of October 1, 1925, there was published one item and in the July 9, 1925 issue there was another item on removing Essex pistons.

Q.—Recent Essex instruction books advise the use of heavy oil instead of medium. Has the oil pump been changed in order to handle the heavy oil?

The oil pump has not been changed, but it has been found that the heavy oil works better. In winter it would be advisable to use medium oil.

Peculiar Knock After 7000 Miles

Q—I have been reading Motor Age for ten years and have profited by same. I have been servicing an Oakland Sedan, car No. 3038654, 1925 model, which has developed a peculiar knock. It can be heard at idling speed and up to 15 miles an hour. At any speed over that it cannot be heard. Sounds like a piston pin knock, but is not quite heavy enough. By shorting out No. 1 plug the noise is stopped. Have taken out the pistons and examined the bearings, taken up the timing chain, adjusted the valve clearances and examined the oil pump, all to no advantage. By turning crank with pan off can hear compression leak pass the rings. Car has been driven 7,000 miles and has been well taken care of. The knock is almost the same at all speeds up to 15 miles an hour and after that it disappears. Have reached my limit and am calling for help.—C. B. Eagan, Alma, Ill.

As shorting No. 1 plug eliminates the knock it appears that the trouble is in the No. 1 cylinder. We would suggest your removing the piston and rod assembly from the No. 1 cylinder and running the engine that way merely to check your previous test. A similar condition was encountered on another well known car and it was found that the cylinder bore was worn hour-glass shape. This condition meant that the piston in moving up and down passed over a sort of ridge and in doing so produced a slap which did not seem to have the characteristic sound of any of the well known knocks. The trouble was found by carefully measuring the cylinder bore at various places. A hone was then used to take the ridge out and after that the knock had disappeared. The fact that the compression is not good and that the gas blows by the piston rings also seems to indicate a condition of this sort. A half way method of testing for a condition of this sort is to put a small quantity of 600-W in the cylinder affected and run the engine. While the 600-W is acting as a cushion between the piston and cylinder wall, a knock of this kind will be temporarily eliminated.

"EASY WHEN YOU KNOW HOW," SAYS HE

Q—I just happened on a question by Edgar D. Best of Charleston, Illinois, on page 24 of the July 9, 1925, issue of Motor Age where he says he is having trouble getting the Essex pistons out of the engine. I want to say there is not an Essex made that the pistons and rods will not come out the bottom and then very easily and any one who wants to know how can write to me and I will tell them the method I use. I remove spark plugs, take off pan and lay the six pistons on the floor in less than 30 minutes and they go back just as easy.—Roy Bowser, Gibson, City, Ill.

The Readers' Clearing House

THIS department is conducted to assist dealers and maintenance station executives in the solution of their problems.

All questions are answered direct by letter, so the name and address should be given in full. This saves waiting for the answer to be published, which sometimes occurs several weeks late, depending upon the space available.

Readers' names will not be published with articles, if a request to this effect is received with the letter.

Inquiries not of general interest will be answered by personal letter only. Emergency questions will be replied to by letter or telegram.

Also state whether a permanent file of MOTOR AGE is kept, for many times inquiries of an identical nature have been made and these are answered by reference to previous issues.

Addresses of business firms will not be published in this department but will be supplied by letter.

Technical questions answered by B. M. Ikert and A. H. Packer; Legal, by Wellington Gustin; Paint, by G. King Franklin; Architectural, by Tom Wilder; Tires, by a Practical Tire Man; General Business questions, by MOTOR AGE organization in conference.

Planning Your New Building

By TOM WILDER

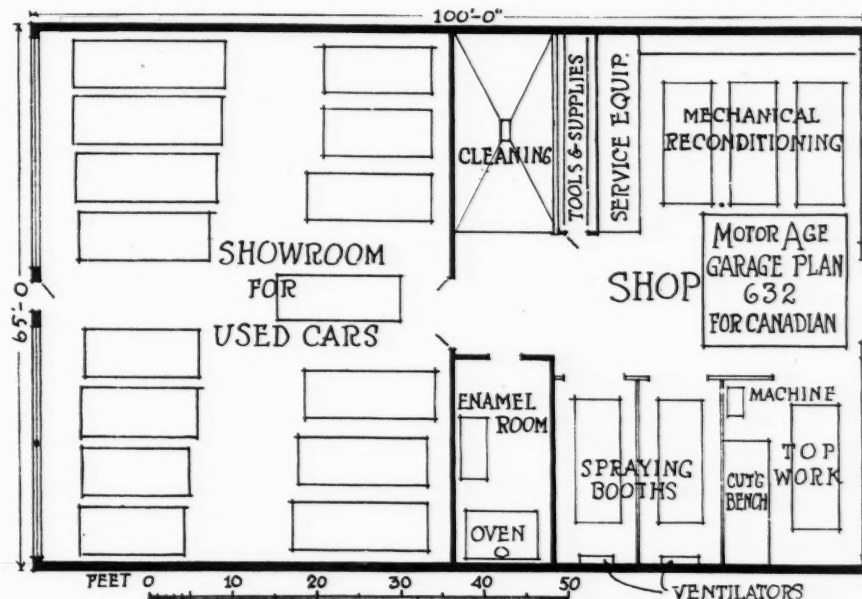


A Complete Small Used Car Plant

Q—As we are anticipating the building of a used car merchandising mart, in the center of our city, we would appreciate it very much if you had any plans or specifications which you might forward to us that would be valuable in the construction of this building. The size of the building will be 100 by 65. It is our wish to have the showroom covering the front part of the building, approximately 50 by 65 in size. In the balance of the building we wish to install a reconditioning department, a Duco refinishing department and a retopping department. Any suggestions which you might give us in reference to this will certainly be appreciated. —Canadian.

You have given us no data regarding the surroundings of your proposed building and we are assuming that it is an inside lot with an entrance on the alley.

The showroom may be arranged as we have indicated and the two rows of cars across the width of the building or if more show and less cars are desired the two rows may be across the end of the room, leaving an ample space in the center. The width and depth of the room in the rear, to be used for the reconditioning shop, led us to the arrangement we have shown. The mechanical work is done on one side and the finishing and upholstering on the other. We have shown a small enameling room with an oven, but no doubt you will have this work done outside as is usually the case.



Reconditioning in the back and selling in the front

If this is done the space could be used for another spraying room or the cleaning rack could be moved to this side leaving more room for mechanical operations.

The spraying booths are such as were described in *MOTOR AGE* recently, being just large enough for a car and the operator and having a ventilating duct at one end to exhaust the air which comes in through the open doorway at the other end and carrying with it all

the fumes of the material which is objectionable.

The cleaning apparatus, of course, will include not only washing equipment, but painting removing and cleansing equipment which is absolutely necessary in this line of work.

Skylights should be provided in this room whether there is side light or not, as good work depends largely upon ample light.

Checked Everything and Engine Still Overheats

Q—I wish to thank you for the valuable information you have given me in the past and I am now coming to you for help again. We are having trouble with a type 61 Cadillac. This car suddenly developed a very bad case of over heating. It would boil after being driven a distance of five miles or less. We examined fan, radiator, pumps, hose connection, spark, ignition timing adjustment, also cleaned carbon and ground valves, but to no avail. The only way we could relieve this was to advance ignition timing until there is a very bad spark knock but now the car has very little power and acts as though brakes were dragging, but the wheels turn free. We also used two cylinder head gaskets but this did not help the heating any. If any of the readers have experienced this trouble, would be very glad to hear from them.—Motor Sales Co., 505 W. Main Street, Charlottesville, Va.

We believe the trouble is either in the pump or thermostat. You may have examined the rotation of the impellers and found that they were rotating. However, in some cases the pin which holds the impellor to the shaft is sheared off, although the impellor is still a tight fit on the shaft. Under these

circumstances there will be rotation at slow speeds, but there will be slippage at medium and high speeds when the pump should be circulating the water. For this reason we would suggest your trying to slip the impellor blade on the shaft, using a lever of some sort such as a hammer handle. If there is no question but what the pumps are operating, then you should check the thermostat in accordance with an article which appeared in the *Clearing House* section of *MOTOR AGE* under date of September 17, 1925.

OWNER MAY RECOVER STOLEN CAR

Q—If a car is stolen property and is brought in here either by the thief or by the city officials who have picked it up from the streets, can same be removed without paying for storage charges?—Wabash Harrison Garage, Chicago, Ill.

The owner may recover his stolen property wherever found. The garage-keeper can only have a lien through orders to store or repair by the owner or his agent. The thief is no agent, neither are the police agents. But you can proceed against those who claim to be agents personally.

Test Data on Ford Generator and Starter

Q—Supply test data on the Ford generator and motor.—Ide Garage, Outlook, Wash.

The generator field draws 2.4 amperes at 6 volts, while the generator when operating as a motor should draw from 4 to 5 amperes. This latter figure may vary slightly due to the brush tension. If the ammeter reading is steady when checking the motoring current it is a good indication. If the armature turns with a jerky motion and the ammeter hand fluctuates violently, it usually indicates armature trouble.

The starting motor should crank the engine at 150 r. p. m. drawing 160 amperes at 5 volts. The data of the starting motor is as follows:

Torque	R. P. M.	Volts	Amperes
1 lb. ft.	2500	5.5	125
5 lb. ft.	1050	4.4	330
9 lb. ft.	425	3.6	465
13 lb. ft.	Lock	3.0	580

The above information is taken from Reed's Service Manual.



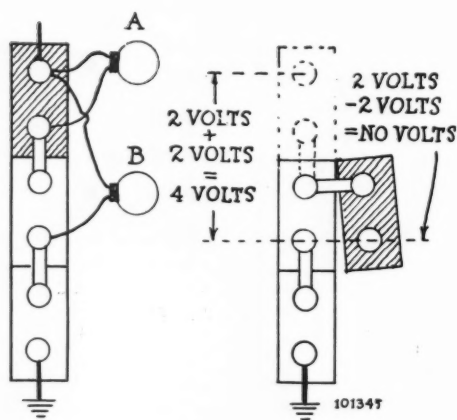
Clearing Up Electrical

EDITED BY A. H. PACKER

When One Cell Gives More Light Than Two

Q. We recently had a peculiar experience with a storage battery which had one cell shorted. We do not have a voltmeter in our shop, so we took the car to an electrical station and had it tested. The meter showed two volts on each cell when there was no current flowing and when the starter was operated the voltage would drop down slightly on two of the cells. On the third cell however, which has the cable on it going to the starting switch the voltage dropped down to 1 volt. The man then tested the cell again and the reading dropped down to zero and then the needle of the voltmeter went back against the stop pin.

After the car was brought back to our shop we tried a test light on each cell to see which cell was bad and what was the matter with it. We are showing a sketch showing the tests made. With the lamp connected to A, that is, across the cell which seemed to be defective, we found



Shorted cell in a battery acts as a drag on the other cells

that it would light up nearly as well as across either of the other cells. In stepping on the starter button, however, the lamp at A would first get very dim and then brighten up again. In fact, watching it carefully, we could see that the lamp would go out and then brighten up every time the starting pedal was operated. With the lamp connected across two cells, that is, the shorted one and the center cell it would light up brightly at first, but when the starter button was operated the lamp at B would go completely out and stay out as long as the starter button was held down. Could you tell why this happened and why two cells, even if one is shorted would give less current to the lamp than the one shorted cell? Chicago Mechanic.

When a cell is shorted, it changes from a battery to a resistance and the other two cells then work together in sending current through the shorted cell, just as they would in sending current through the rest of the wiring. We are showing an illustration which contains two sketches, the one at the left being the sketch you sent us and the one at the right being for the purpose of explaining the results you obtained. The 6 volts

obtainable from a battery are obtained by adding up two volts at each cell and if we imagine the cells are stacked one on top of another, the more cells we have the higher the battery becomes and the more voltage we get.

In the sketch at the right we will assume, however, that the top cell is defective and has toppled over so that it is hanging down and the terminal which should be at the top of the battery is down about two-thirds of the way. The voltage of the middle and upper cell should act as indicated at the left of the right hand sketch. When the cell becomes shorted, however, it changes from a battery to a resistance and we know that in sending current through a resistance we lose instead of gaining voltage. Accordingly the effect of the center and upper cell, when the upper one is shorted is to subtract 2 volts from 2 volts and leave no voltage, which accounted for the lamp at B not lighting up, while the starter current was flowing.

Cadmium and Millivolt Readings

Q. Is the Cadmium test reliable with a Constant Potential outfit. If not, explain why. J. L. Sottiaux, Chenoa Battery Service, Chenoa, Ill.

A. The Cadmium test is considered to be reliable when the Cadmium stick is kept in water when not in use and when readings are taken while the battery is being either charged or discharged. When a battery is charged with a Constant Potential system the current at first is comparatively heavy but when the charge nears completion the current flow will be about the same as the finish rate with a Constant current system. For this reason we feel that the Cadmium test would be just as reliable with one system as the other. If in doubt as to the amount of current flowing at the end of a charge run when a Cadmium reading is wanted a lead with ammeter could be used as one of the connections from the battery to the generator bus bar.

Q. Can I use the voltmeter used for Cadmium test as a millivoltmeter? Explain millivolt test.

A. No. The volt scale of the Cadmium meter is usually 3 volts. The volt scale of the millivoltmeter is usually 100 millivolts or .1 volts. From this you can see that the scale of one is 30 times that of the other.

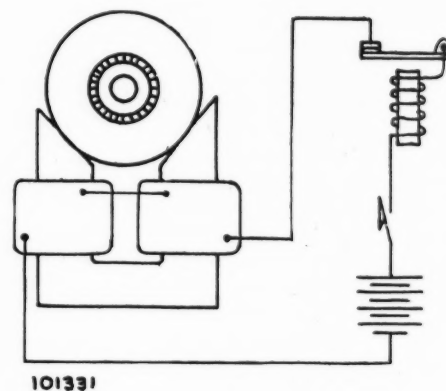
Millivolt readings are not required to a great extent in the electrical shop, although occasionally a test might be helpful in locating a high resistance connection when the loss of voltage is not over .1 volt. In testing armatures this also may be used by sending current through the armature winding and measuring the millivolt drop from bar to bar.

Growler Difficult to Use With D. C.

Q. Would like to have a wiring diagram for a growler for testing starter and generator armatures. I have a 32-volt Delco lighting plant to supply the current. R. H. Baker, The Avilla Garage, Avilla, Mo.

A growler is designed to operate on alternating current, usually 110 volt, 60 cycle current. The reason for this is that the action of the growler depends on change of current and consequently change of magnetism, which will generate current in the armature being tested. We are showing a circuit which in some cases has been used successfully. It is not guaranteed, however, and depends on having a suitable vibrator to interrupt the direct current from the battery.

Thirty - two volts would probably



Vibrator and battery used to operate a growler

be too much to use. You could start with two cells or three and use any voltage necessary, depending upon the strength of the growler indications and on the sparking or lack of sparking obtained at the vibrator contracts. Several readers of Motor Age have from time to time reported successful results by using a Delco ignition relay, one of the old devices used in 1911 and 1912 on Hudson and Cadillac cars. These are sometimes available at auto wrecking concerns.

If you do not have a great deal of generator work it might be well to check each job carefully to make sure that brush holders are not grounded and that the field circuit is correct and then test each generator as a motor. A normal generator will rotate evenly and draw a steady current while one which has a defective armature will vibrate badly when motoring and will draw an uneven current as indicated on the ammeter. Under such circumstances the ammeter needle will fluctuate violently.

Trouble With Bill Fixit

EDITED BY A. H. PACKER



Wants to Replace Switch on a Haynes

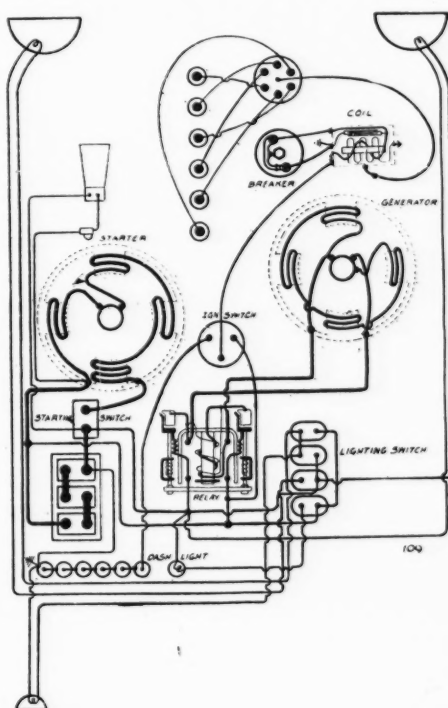
Q.—Please send by return mail information regarding changing the lighting system on a model 34 Haynes touring car. We wish to replace the lighting switch and ammeter which are combined in one unit, with two or more separate units without changing the entire starting and lighting system. If possible send wiring diagram and information regarding replacements. Howland Garage, Brandon, Vt.

We are showing a wiring diagram on the model 34 Haynes car, but it does not include an ammeter. Perhaps the car you refer to is some other model, for we have investigated and cannot find that the model 34 used an ammeter. If you had to replace one of the special switches used to give series parallel connection to the head lights, you might find it easier to re-wire the car for a grounded system as such a system is comparatively simple. We can hardly give you detailed information as to the connection of units when we do not know what units you are going to use. If the ammeter is being replaced any ammeter used on an automobile will be satisfactory and you would connect it in exactly the same way even if it is a separate device instead of being built as a unit with the switch. When you come to replacing the switch the job is not so simple and we believe the best practice would be to use a new switch of the same type, if one is available. You could probably secure one from the makers of the equipment, Leece-Neville Company, Inc., Cleveland, Ohio.

DEFECTIVE AS A MOTOR BUT GENERATES

Q.—We have been confronted with two electrical problems in the Delco and Wagner generator respectively. We replaced the armature in a vertical type Wagner generator which came from a Studebaker car and rigged it up on a Moon using a strap to hold it. This generator when running as a motor draws a current of 18 amperes and when driven generates 10 amperes maximum. Explain the unusual features to us.—Wilson Brothers, Uniontown, Ala.

One possibility is that the armature is partially shorted or grounded which would show on a growler test or in the case of a ground would show up by testing on 110 volts. Another possibility is that the 18 amperes to which you refer is the current taken when the armature is not allowed to rotate as would be the case if the generator is on the car. Another possibility is that there is a mechanical bind in the bearings or that the armature rubs on the pole pieces. You can check this with the generator off of the car by sending current through the field winding only and having all brushes lifted. Then turn the armature by hand to see if the current makes the armature turn with great difficulty. A slight increase in the difficulty with



Wiring of Model 34 Haynes

which the armature can be turned is natural. Another possibility is that the main brushes are not on neutral. Run the machine as a motor with the third brush lifted. There should be practically no tendency for the armature to rotate in either direction, although a slight tendency to turn in the normal direction is permissible.

Charges at 4 Volts—How Come?

Q.—The Delco generator is from an Essex car and has a rewound armature in it. It generates current at only 4 volts. The amperage, however, is 15 to 20.

The voltage of the generator is always the same as the battery with the exception of a few tenths of a volt difference due to the resistance of the wiring. For example, if the battery voltage is 6.5 the generator voltage might be 6.8. As you get only four volts at the generator we believe that there is one cell shorted in the battery, for it would be impossible for a generator at 4 volts to send current into a battery at 6 volts.

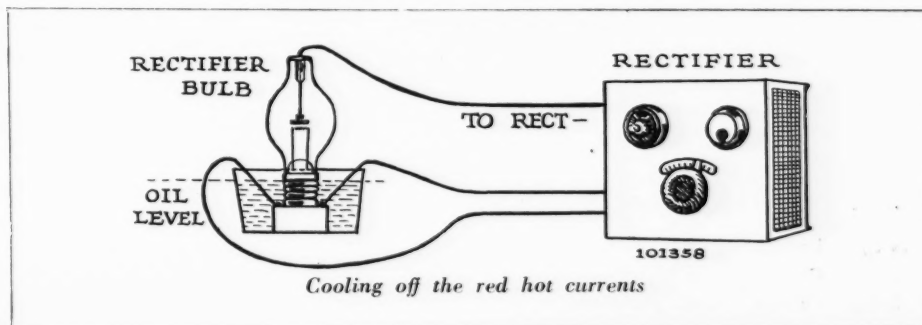
Brushes Last Only 100 Miles

Q.—We have a 1918 Buick six that causes considerable trouble by burning off the carbon brushes on the generator. This generator will charge for a short while after new brushes are installed but after the car has made between 50 and 100 miles the generator will stop charging. Then if we look at the brushes we find they are burnt off except for that portion which the lock plate holds. We have never had the generator charging over 15 amperes.—Buick of Wisconsin.

If an armature is rewound and improperly connected it will cause excessive sparking at the brushes which will quickly burn them away. On the other hand if the brushes are improperly located even a correctly wound armature will cause trouble in this way. We believe that on the Buick, however, it is not possible to get the brushes appreciably out of the right position. Another condition which will give trouble, is using brushes made of the wrong material. Engineers at the factory spend a great deal of time experimenting with the various brush materials and finding one suitable for a machine which is being developed. For this reason it is essential to use the proper brush for any particular generator. Another condition that will cause this trouble is an open circuit in the armature, but this should also be noticed by a reduced output, by burning of one or two commutator bars and by flashing at the brushes when the machine is running.

OIL COOLING SAVES THE BULB

As a reader of your MOTOR AGE I have seen a number of hints for the repairman and now will give you one of mine. A 10 battery Tungar rectifier that I have, burnt out so many bulbs for me that I decided to do something. The bulbs would get hot in the socket and the center of the bulb would melt. I put my socket in a can and put oil in the can up to the level of the bulb as shown in the enclosed sketch. I had connections from the socket to the rectifier so that the wiring was just the same. For the last six months I have had no trouble and the oil keeps the bulbs cool and keeps the connection from getting hot and corroding.—Joe Povich Garage, Zeigler, Ill.





Motor Age's Flat Rate Forum

EDITED BY B. M. IKERT

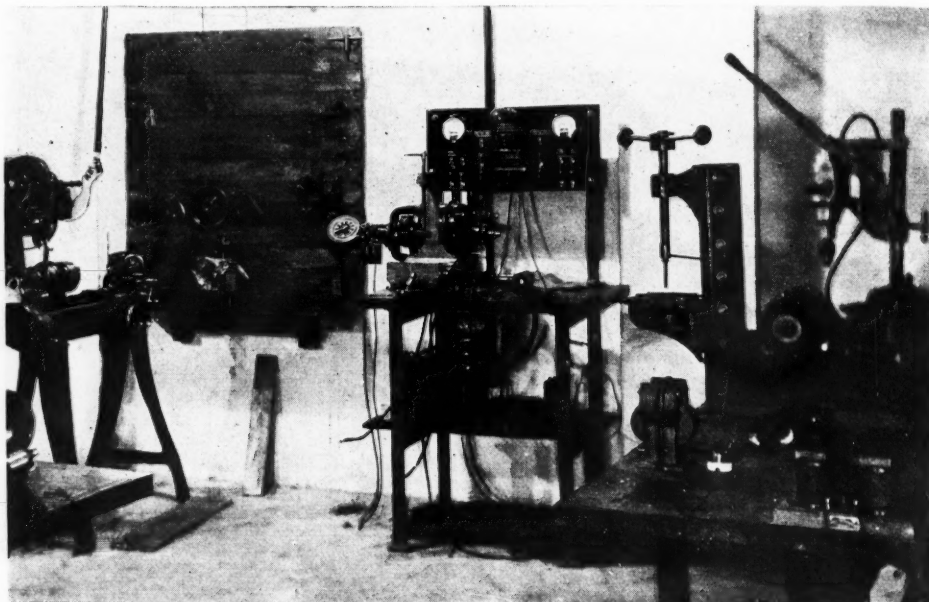
Some Do's and Don'ts to Observe With Flat Rate

Electrical Flat Rate Chart

A comprehensive schedule of suggested flat rate charges for automotive electrical service operations will be published in the Nov. 5, 1925, issue of MOTOR AGE. This chart has been compiled by A. H. Packer, associate editor of MOTOR AGE and specialist in automotive electricity.

Since a large proportion of the service work required on the average automobile has to do with the electrical system, this chart will be of interest to practically every automotive shop. Owing to its comprehensive character, covering all the leading makes of passenger cars, it is suggested that MOTOR AGE subscribers probably will want to preserve the issue containing it.

This advance notice of publication is given so that those who are interested will not overlook this important feature.—Editor.



THINGS THAT HELP FLAT RATE

Since so many maintenance and repair operations are confined to the electrical equipment of the motor car, it is a decided advantage to have on hand equipment for testing and repairing the electrical units. A broken rear axle shaft suggests an obvious repair, but a broken wire inside a generator armature cannot be found very readily without equipment

A CARPENTER was asked why it was he could apparently do more work in a day than his fellow workmen. He answered "I measure twice and saw once."

The automotive mechanic does not have to do very much measuring in the

same sense as does the carpenter, but nevertheless he has to use his head and think twice before he does the work.

In line with this thought are several things which seem to suggest themselves and which if carefully observed help the

mechanic to do a better job in less time. They are:

Use new cotter pins whenever you have occasion to remove old ones.

Don't use too much energy in trying to remove parts or units. Proper tools and methods will prevent straining or breaking parts.

Don't use shellac on gaskets or hose connections. You don't need it if the gaskets or hoses are in good shape and the surfaces are clean.

Use rags instead of waste. Cheesecloth is as good as anything because it is free from lint.

Don't hammer off clutches, gears or bearings. Use pullers for such work.

Use the right wrench for the job. Don't use a big wrench on a small nut. Open end wrenches and socket wrenches are of the right length usually to get the correct amount of force for tightening a nut. Additional force strains the nut and bolt.

Put clean oil on parts like pistons, valve rockers, shackle bolts, etc., when assembling them.

Use tools correctly. See that your screwdrivers have the right kind of edge so they will not slip out of the slot in the screw head.

Don't "choke" a hammer. Grasp it near the end of the handle. You then have better control over the blows.

Study a job before tearing it down. It will facilitate quick reassembly.

MOTOR AGE'S FLAT RATE FORUM

No. 36

FLAT RATES FOR

CHRYSLER CLUTCH OPERATIONS

Continued From Oct. 15 Issue

Manufacturer's
Official
Designation

	Time
5712 Remove and install clutch release bearing including removal and installation of clutch and transmission assembly.....	4 1/2 hrs.
5713 Remove and install clutch release shaft including removal and installation of floor boards and cover plate.....	2 hrs.
5714 Remove and install clutch release shaft lever.....	3/4 hr.
5715 Tighten lever on clutch release shaft.....	1/2 hr.
5716 Remove and install release yoke or link on rod from shifter shaft lever.....	1/2 hr.
5717 Remove and install pedal shaft lever.....	1/2 hr.
5718 Remove and install pedal shaft.....	3/4 hr.
5719 Remove and install clutch pedal including removal and installation of floor boards.....	1 hr.
5720 Adjust clutch pedal stop screw and release yoke to give proper clearance between release bearing and throwout yoke and between clutch pedal and toe board.....	3/4 hr.
5721 Remove and install pedal return spring.....	3/4 hr.
5722 Grease clutch throwout bearing.....	1/2 hr.

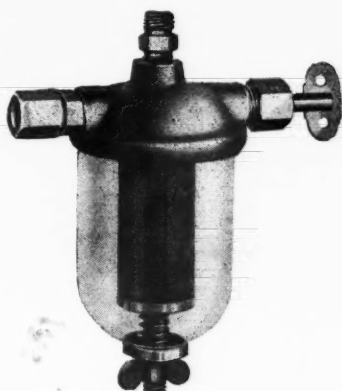
THE MARKET'S NEW OFFERINGS

Accessories—Equipment—Supplies

Rayfield Filter

Cut Shown Below

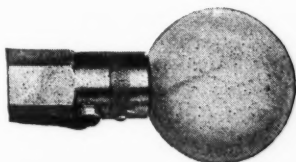
EFFECTIVE gasoline filtering is claimed for the Rayfield Filter which is being produced by the Beneke Manufacturing Company, 21st and Rockwell Streets, Chicago. An unusual quantity of fine brass wire gauze is employed in this device which will not corrode and which is very durable. The filter is easy to install and clean. It has a large glass bowl for accumulations of dirt and water. In cleaning it is only necessary to remove the nut at the bottom which



holds the bowl to the filter head. This permits all necessary accessibility. The Rayfield Filter is packed in an attractive two-color box and with every order of 24 the company includes a display hanger in three colors with easel back and the necessary fittings to suspend a filter from it. This is for counter or window display. The filter lists at \$2; Pacific Coast, \$2.50.

Illuminated Gear Shift Ball

KINGSLEY-MILLER Company, 600 W. Jackson Boulevard, Chicago, is on the market with an onyx gear shift ball which departs from the conventional in the fact that it is illuminated. The ball permits use of different colored bulbs ranging in size from six to 16 volts. It screws on like the ordinary composition ball, the cord being slip-knotted near the top and bottom and hooked up with the ammeter by leading the wire under the floor board. The light turns on or off with a switch immediately under the ball and the ball when illuminated gives a pleasant light in the driving compartment of the car. The list price is \$5.



Illuminated Gear Shift Ball

Why Not Let Her Have the Job?

A large accessory merchant who has attractive window displays makes the confession that he has always left this job for the attention of a young lady who assists in the bookkeeping or one of the other two girls in his office. The strange thing is the job has not always been handled by the same girl and yet the windows have been consistently attractive.

The proprietor admits his own shortcoming on window trimming but has a notion that any young woman who has a knack for designing her own clothes and thinking in terms of art can beat the average man all to death on decorating a window. So he gives such a girl a chance to use her talents on the window display, and gets good results. This is a thought which some other dealers might be able to harness. As a rule women have much better taste than men. We don't dare deny it.



Bear Crankshaft Pulley

Bear Crank Shaft Pulley for Fords

THE Bear Manufacturing Company, Rock Island, Ill., is marketing a Flanged Crankshaft Pulley with a special oil retainer, for Fords. The flanges keep on the belt while the oil retainer catches oil and keeps the belt dry. The device is made of reinforced gray iron and is priced, complete, at \$1.25.

Parking Lamp

A NOVEL parking lamp with dash switch is being produced by Joseph Pollak Tool and Stamping Co., 81 Freeport Street, Boston. The lamp is provided with two leads instead of terminals and the bulb is removed by pulling on the cable. This company is also manufacturing a push and pull switch, made of brass throughout and is adapted for radio as well as automobile use. Price, without separate switch, \$1.00.

Kantglare Deflectors

Cut Shown Below

KANTGLARE Deflectors for Headlights, manufactured by the Fairchild Deflector Corp., Clinton, Iowa, are said to divert the rays of the headlight in such a manner as to eliminate danger of blinding or distracting drivers of approaching cars or similarly affecting pedestrians. At the same time it is said the Kantglare Deflectors make for a far-reaching, low-level driving light of high efficiency. The



device does not dim, its purpose being to deflect. The use of special lenses is not necessary. Made to fit any headlight each Kantglare Deflector consists of a single-plane double wing with a central barrel to fit over the bulb and a narrow reflector band with two small vacuum cups to hold the device in correct position. A distinctive blue bull's eye forms the front of the barrel. Installation can be accomplished by anyone without tools and the deflectors sell for \$3 a pair.

Increase Shock Absorber Price

THE list price on the Houdaille Shock Absorber for Fords has been changed from the former figure of \$25 a set, completely installed, to \$30, according to an announcement by the manufacturers, the Houde Engineering Corporation, 177-237 Winchester Avenue, Buffalo, New York. The shock absorber is known as Model "F".



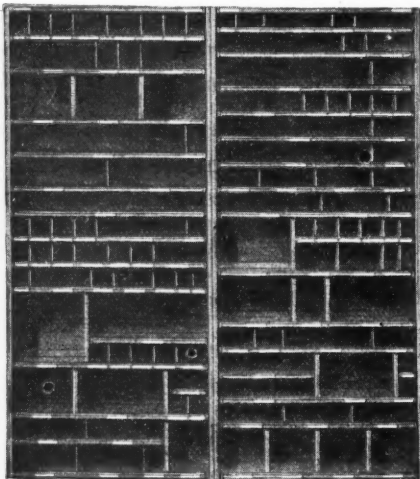
Pollak's Parking Lamp

GETTING MORE OUT of the SHOP

Storage System for Parts of Improved Ford Cars

When the improved Ford made its appearance recently, Lyon Units were available for the parts dealer.

The two-section system illustrated provides a total of 115 bins or storage spaces. The section on the left provides parts storage for front and rear axle, wheels, frame, gas tank, motor, magneto and flywheel, transmission, and steering gear parts. The right section takes care of the springs, radiator thermosyphon, fan and hood, carbureter, fenders, running boards and shields, coils, switches, ammeter, starter drive, horn and headlamps. Each bin is labelled with the part number for which it was designed. Capacity of the bins is based on the recommended amount of stock that should be carried, and makes possible a



Two section Lyon unit made for parts of the new Ford model

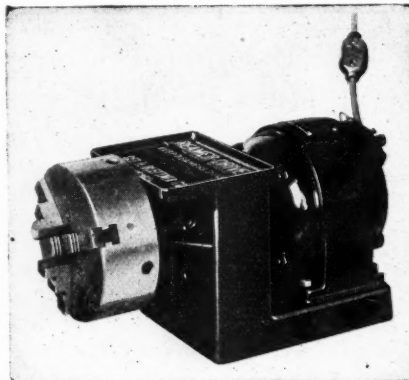
perpetual inventory. A glance into the bin tells when and how much to re-order.

These storage units are 36 in. wide, 12 in. deep, and 84 in. high. They are finished in durable olive green enamel, baked on. They are made by the Lyon Metallic Mfg. Co., Aurora, Ill.

Power Operated Reamer Drive for Bench Work

Designed to grip firmly and to electrically operate reamers when reaming such parts as bushings, spring shackles, connecting rods, pistons and the like, is the new power machine manufactured by the Geo. H. Blettner Co., Chicago, Ill. This machine is powerful enough to remove .020 in. stock with each pass of the reamer from bronze bushings up to 1½ in. and babbitt up to 2½ in. in diameter. The spindle is provided with a geared scroll chuck which accommodates reamer shanks up to 1¼ in. in diameter.

The adaptability of this electrical device to bench work is the outstanding



Power operated reamer drive for bench work

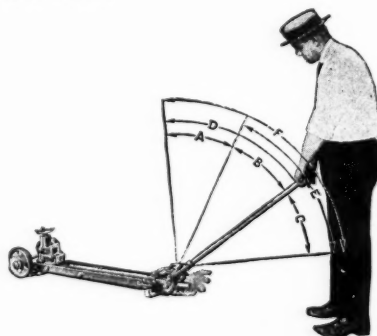
feature. It is easily and quickly mounted on the bench and occupies a space of only 7 by 15 in.

This machine is operated by means of a Westinghouse ¼ h.p. motor mounted on a base provided for it. A regular running speed of 38 rpm. is accomplished by means of a balanced gear reduction running in oil. All gears are totally enclosed in suitable casing to protect the operator at all times.

This machine weighs only 80 pounds prepared for shipment. It is finished in black enamel to give it a pleasing outward appearance.

Manley High Speed Jack

The Manley Manufacturing Co. of York, Pa., has recently added the "Manley Hi-Speed Jack" to its line of garage and shop equipment. This is a geared jack mounted on broad faced wheels with roller bearings. It is so constructed that it can easily raise cars having small road clearance and also allows the wheel of the car to pass over the frame of the jack. There are six positions for the operating handle, this permits the free use of the jack in cramped places and on cars having overhanging bodies and bumpers. With the handle in a horizontal position the overall length is 8 ft. The weight of the jack is 115 lbs. When equipped with steel tires the price of the jack is \$36, and \$47 when equipped with rubber tires.

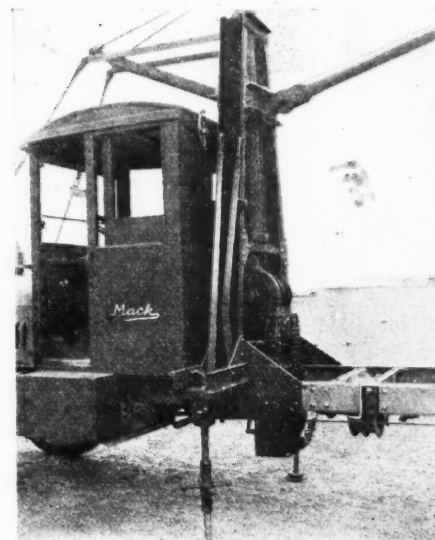


Manley high speed jack showing the range of the operating lever

A New Portable Crane for Light Trucks

The International Motor Truck Company, New York, has designed a portable crane for mounting on Mack Trucks of 1½, 2 and 2½ tons capacity. While designed primarily for the purpose of unloading 1000 gallon fuel oil tanks from gondola cars, the crane is also adapted for other uses and according to the manufacturers, will lift up to 2500 lbs.

The equipment consists of a mast, braced and anchored to the chassis frame; a special drum-winch and two booms. Power is applied to the winch from a power take-off through a one-speed forward and reverse gear and a chain drive to the winch-worm sprocket.



Portable crane for mounting on Mack Trucks of 1½, 2 and 3 tons capacity. It is said that it will lift up to 2,500 lbs.

The controls, consisting of a motor clutch and gear shift are on the left side of the mast, directly behind the cab. Attached to the back side of the cab is an auxiliary gas control which permits the operator to regulate the speed of the engine without leaving his position at the control levers. While the crane is being operated rigidity of the chassis is obtained by two jack screws which support the mast from the ground. These screws are attached to the cross-members by means of a swivel arrangement, so that when not in use, the free ends may be fastened to brackets on the sides of the frame.

The International Motor Company states that the entire assembly may be mounted on any standard Mack truck with but little alteration of the body.

EDITORIAL

How Some Dealers Lose Sales

A DISTRIBUTOR'S service manager complained the other day about how hard it is to get some dealers to install equipment and give adequate service on the cars they sell. He said that practically all the dealers for that make of car in his metropolitan area sent some of their owners to the distributor's service station and some sent nearly all.

"But I guess we ought to be satisfied," he said. "In many cases these owners become so well satisfied with our service that they never go back to the dealer they bought the car from and when they get ready to buy a new car they come to us."

Under existing conditions the best market for any widely distributed car should be among present owners of that make. These owners are constantly coming into the replacement market and if the dealer who sold them before is not able to sell them again he is losing about the widest market that is open to him. Failure to sell them again is too often due to having failed to give satisfactory service.

A large Chicago dealer takes pride in his service and goes to almost any length to satisfy his customers sold something more than 500 new cars in a recent month and almost 200 of these sales were to former owners of the same make. A known group of prospects representing approximately 40 per cent of a dealer's new car buyers certainly is worth cultivating. And it is possible, by modern methods, to make a profit while cultivating this field. It is worth thinking about and doing something about.

There is a county in Illinois which, according to its assessor, has more automobiles than it has watches. One reason for this is that the taxpayer can't also hide his car in his vest pocket.

Safety Sense Needed

A NUMBER of constructive thoughts came out of the recent National Safety Congress at Cleveland. One was that in order to reduce the number of motor vehicle accidents it will be necessary to build up in people an instinct for safety. It was said that dogs, chickens, pigs and other animals that wander into roads and streets are not nearly so likely to be hit by automobiles as they were in the early days of motor transportation. They have developed a safety instinct and are more alert to dangers of the highway.

The great majority of persons appear to have well developed safety instincts, but still there are far too

many men, women and children killed and injured on the highways. The number of fatalities in 1924 was nearly 20,000. A large number of these were children and elderly persons. It seems that the safety instinct of the active adult population should be extended to take in a definite responsibility for keeping young children and feeble old people away from points of danger. That would be real safety sense.

"Work," an expert told a group of automobile salesmen, is the big word in successful selling. After that comes another big word. You spell it just like the first one.

A Promising Autumn

WHEN you see big posters on the side of the barn along the rural highway announcing a state or community fair—you know that the automobile show season is on. These displays are always the first of the long succession which begins in September and continues well into the following year. Reports from automotive displays at fairs this year are very cheerful and optimistic. The farm dollar is rolling toward the automotive market. More of this farm money will be spent later in the year after the corn is husked, after the cotton crop is turned into money and after wheat, now being held, is marketed. Technically the Fall season begins with the first of September but actually we are just now entering upon the Fall—and it is promising.

Don't be afraid to stand behind the car on your floor. When one of last week's buyers is coming through the door—even the gyp will do that.

Sell Him His Winter Needs

MAIL campaigners should be busy now lining up automobile owners on their winter needs. "Are you prepared for the winter?" Automotively speaking, that generalizes the question which should be asked. Then the specific suggestions,—winter overhaul (to render driving in this especially hazardous season more safe), heaters, chains, illuminating devices for bad nights, etc. Give the owner a message on the importance of "preparedness." This campaign can be pushed until time to take up one for the promotion of Christmas buying.

Knocking a competitor's make does not sell the prospect on yours so often as it makes him think he'd better go back to the horse and buggy.

Automobile Stocks Kept at Low Level

Although Production Points Down, No Slump Expected

Year to Date Shows Wisdom in Keeping Output in Line With Sales

PHILADELPHIA, Oct. 21.—The tendency in automotive production and sales is now definitely downward, but there is no indication of an abrupt slump. In a few instances the factories are still behind in meeting orders, a condition that is being rapidly overcome. On the other hand, there is virtually no overstocking of new cars anywhere, either at the factories or in the hands of dealers and distributors, and this is the strongest point in the whole automotive situation.

The year to date has definitely established the wisdom of keeping production closely in line with sales; the earnings of the manufacturers have been high, labor has been regularly employed, and retailers have not had to take losses to reduce accumulations of cars. Some already large factories are being expanded, however, and the temptation to overproduce perhaps will be stronger this winter than ever before. It remains to be seen whether the cumulative weight of experience will be sufficient to overcome the desire to maintain production and distribution at a uniformly high level.

The used car situation is unfavorable. Stocks normally increase about this time, but the seasonal trend has been accentuated by the price cuts on closed cars and the exceptionally liberal time sales terms on which new vehicles can be obtained. A rigorous policy on trade-ins, coupled with careful reconditioning of the used cars, are the measures being taken by the better merchants among the dealers to keep their stocks moving and avoid losses. But even the soundest policies cannot be depended upon in the present situation to entirely discount the reaction that the price cuts on the new closed cars has caused.

Foreign sales of American cars are booming, and there is now no doubt that the earlier optimistic predictions of the automobile men as to the volume that the export trade would attain will be fulfilled. The total for cars and trucks this year will be about 550,000 vehicles. Next year, judged by the programs under way, it will be about 40 per cent greater, and in 1927 will go over the 1,000,000 mark.

WANAMAKER ENTERS AVIATION

NEW YORK, Oct. 17.—Rodman Wanamaker announces that an airplane freight and passenger service from New York to Miami, Fla., is to be operated jointly by the John Wanamaker store and the Stout Metal Airplane Co. Ford engineers are

now seeking suitable landing places along the proposed route. Air shipment of freight is expected to prove popular because of the railroad embargo on all Florida bound merchandise except food and other necessities.

County Votes Own Road Bonds

SAN FRANCISCO, Oct. 17.—Marin County, one of the smaller and less populated divisions of California, has just voted by heavy majority, a bond issue of \$1,250,000 for the construction and improvement of its own roads, exclusive of state or federal roads within its boundaries. This sum will build and pave 96 miles of highway, 18 feet wide and seven inches thick. This is believed to be the heaviest bond issue for highway purposes ever voted by a county of the size and population of Marin.

Tire Prices Climb Again As Result of Big Demand

AKRON, O., Oct. 17.—Another general increase in automobile tire prices was put into effect Oct. 16 by the Goodyear Tire & Rubber Co. Price of casings, with the exception of certain small size types, was raised 15 per cent, and inner tubes and solid truck tires, 20 per cent. The smaller size tires are 5 to 10 per cent higher.

Other major manufacturers, including Firestone, Goodrich, Fisk, United States and Miller, met the Goodyear advance.

Although it was generally realized in the industry that a tire price increase was inevitable before the first of the year, most observers believed it would not occur until Nov. 1 or later. Demand for tires is generally less at this time of year than in any other period, and manufacturers were trying to avoid such action, fearing it would disturb the market.

Sales of tires have held up better than was expected, however, with a consequent larger consumption of rubber. The demands of manufacturers have prevented the dwindling supply of crude rubber from being replenished, and the shortage has grown more apparent.

NEW AUBURN DEALERS

AUBURN, Ind., Oct. 17.—New dealers who have recently been added to the Auburn organization are listed below:

Breeck Sales Co., Anderson, Ind.; Gerwin Garage, Fremont, O.; Charles W. Myers, Peru, Ind.; Middletown Auburn Co., Middletown, Conn.; Duckworth Garage, Shelton, Conn.; Ed. Reinking, Lakewood, O.; Ridenour Auto Sales, Richmond, Ind.; L. O. Geisler, Gloversville, N. Y.; F. H. Kenney, Worcester, Mass.; Kellogg & Widdifield, Columbia City, Ind.; Auburn Newark Motor Co., Newark, N. J.

Fall Used Car Show Proves Great Success in Chicago

Dealers Receive Higher Prices for Their Products Than in Spring Exhibits

CHICAGO, Oct. 19.—The experiment of holding a used car show in the fall instead of the spring was entirely successful, according to officials of the Chicago Automobile Trade Association at the close of the nine-day exhibit which ended here last night.

More than 50,000 persons attended the display, preliminary estimates show, and about 225 cars were sold off the floor, bringing an aggregate sum of approximately \$225,000, or an average of between \$900 and \$1000 per car.

In the spring shows, the average price was about \$800. Holding the show in the fall gave the exhibiting dealers the advantage of clearing their floors of the higher-priced models before the winter season dulls the used car market.

In reality, the show succeeded beyond the expectations of the exhibitors. They had reached the conclusion that it would be better to take a slightly less figure for their used cars than to carry them over to the spring. Instead of being forced to take lower prices, the cars brought more money than they had in the spring shows, thus giving the dealer more money for his product, and obviating the storage and depreciation losses which would have been necessary, had he held them over until spring.

Nearly every car which was unable to make the green tag of approval by the association committee, and which was then placed on the auction block, was sold. Prices for these cars were low, but the exhibitors again were saved the cost of holding them through the dull season.

OIL JACK PICKS SWEET

CHICAGO, Oct. 17.—The Oil Jack Co., Inc., New York City, announces the appointment of Fred D. Sweet as manager of the middle western territory with headquarters in the Wrigley Building, Chicago. Mr. Sweet formerly was connected with the U. S. Rubber Company, Chicago, in charge of automotive equipment sales and also was sales supervisor for the Biflex Products Corp. He has had broad experience in merchandising automotive equipment and a wide acquaintance in distributive channels for such products.

FORD SHIPS TO OREGON

PORTLAND, Ore., Oct. 17.—On her first trip up the Columbia River to this city the Onandaga, Henry Ford's ship, was loaded with "knocked down" Fords. This is the first water shipment to this city of Ford cars.

Pennsylvania A. A. Elects Hoeverler Its New President

Three-day Convention Is Featured by Addresses of Motor Authorities

Pittsburgh, Oct. 17.—In spite of the counter attraction of the World's Series windup which transformed Pittsburgh into a temporary madhouse, 300 delegates to the fifth annual convention of the Pennsylvania Automotive Association held in the Smoky City Oct. 12-14 listened to a three-days program replete with constructive addresses and launched a progressive program for another big year in the organization's history.

George A. Hoeverler, Stutz-Chandler-Cleveland distributor in Pittsburgh, was named president for the ensuing year without opposition, and Philadelphia was chosen as the convention city for 1926.

High spots in the three day meeting were the addresses by F. E. Moskovics, president of the Stutz Motor Car Co. of America, Inc., C. C. Hanch, general manager of the National Association of Finance Companies, Arthur Mogge, merchandising director of the Automotive Equipment Association, and the sales congress staged by the National Automobile Dealers' Association.

Mr. Moskovics, who spoke both at the banquet held Tuesday evening and at the last morning's session, inspired the dealers with his predictions of great things that are ahead for the industry and for those dealers who can vision the future and build their organizations to fit into the expanding needs of individual transportation.

Other officers elected at the convention were:

Vice presidents, George McFarland, Harrisburg, George Gray, Wilkes Barre, John Leppert, Johnstown, E. T. Satchell, Allentown; secretary, Charles Schwab, Allentown; treasurer, Roy Shreiner, Harrisburg; directors, Floyd Bortree, Scranton, Roy McIntyre, Butler, E. R. Williams, Clearfield, Jo. G. Roberts, Philadelphia, W. U. Massina, Williamsport, and D. W. Ranck, Lancaster.

The Pennsylvania association is now the strongest state association in the industry, with 794 paid in advance members. It has showed a steady, healthy growth each year, and its treasury is in excellent shape.

The membership is made up of 545 motor car dealers, 75 motor car distributors, 56 accessory dealers, 26 garage and service station owners, 14 associate members, 13 battery shops, 6 jobbers and 2 motor marts.

Several cities in the state have 100 per cent motor car dealer memberships.

NEW MARTIN-PARRY PLANT

JACKSON, Miss., Oct. 17.—Location of the southern plant of the Martin-Parry Corporation in Jackson was announced recently by J. A. Callahan, general manager, and Henry Kawn, manager of the local plant. Construction is to start at

once, and the officials expect to have the plant in operation by the middle of the winter. The Martin-Parry corporation is one of the largest builders of auto truck bodies in the United States. The initial plant of the corporation will cover 150,000 square feet and employ 400 or more workmen.

Keep Your Shop Doors Open

MILWAUKEE, Oct. 17.—Milwaukee's first victim of carbon monoxide poisoning this season was Martin Johnson, 25, member of the firm of Johnson Tire & Radiator Co., South Bay and Allis streets. Johnson was found in his garage, lying beside his automobile, the motor of which was running. The door of the garage was closed.

Chevrolet Sponsors Bus Body for 1-Ton Chassis

Detroit, Oct. 17.—Production of a bus on the regular one-ton Chevrolet truck chassis is being sponsored by the Chevrolet Motor Car Company and the Detroit retail store of the company. The bus sells for around \$1,200.

According to A. H. Goodman, manager of the Detroit retail store of the Company, the bus which will seat 28 persons, uses bodies manufactured either by the Martin-Parry Corporation or by Wayne. It is planned to sell the buses to schools in rural districts and also bus lines serving as feeders to electric railways.

The annual production is estimated to be around 20,000 with the daily output being evenly divided. Thirty by five tires are used throughout with other specifications being the same as the regular Chevrolet one-ton truck.

UNIFORM TRAFFIC PLANNED

GRAND RAPIDS, Mich., Oct. 17.—Adoption of a uniform traffic ordinance for the entire state of Michigan will take place here October 22 when representatives from various communities throughout the state will gather for that purpose. Col. A. T. Barber, director of the National Conference of Street and Highway Safety, also known as the Hoover Conference, will be among those present. The recommendations made by the Hoover Conference last winter at Washington, D. C., were largely used as a basis upon which to formulate the new ordinance.

SPARTON PARTY NOV. 7

JACKSON, Mich., Oct. 17.—The Fifth Annual Sparton Party given by The Sparks-Withington Co. will be held here November 7. On that day guests of The Sparks-Withington Co. will be taken for a brief trip through the Sparton factory and immediately afterward they will be taken in special buses to Lansing to attend a football game between Michigan State College and Toledo

Ford Reaches Production Of 8,135 Cars Per Day

Two Records Broken by Company in Attaining Such Output in 60 Days

DETROIT, Oct. 17.—The Ford Motor Company reached a domestic daily production of 8,135 passenger cars and trucks Friday, October 16, and established two new records for the automotive industry. One was that the number of cars turned out was the largest in its history and second that no other company has been able to turn out new models and establish new output records for the entire industry inside of two months.

Before the end of the month, the company hopes to establish a daily output of 8,500 passenger cars and trucks. This does not include the output of the foreign plants and Australia. The foreign plants are turning out the improved models at the rate of 350 a day. By the end of the present month, it is possible that Ford branches throughout the world will be turning out more than 9,000 cars each day.

During the past few weeks, the company has been shipping through its branches to dealers upwards of 7,000 cars and trucks a day, this number increasing daily until the record production was reached last Friday. Production for this month, it was said by executives of the company will be approximately 200,000 and may help to establish a new high record for the industry.

While figures regarding the exact number of orders were not available, it is known that the high daily output was made necessary because of the tremendous number of orders that have flooded the company offices since the improved models were announced.

KEATON TOURS COAST

SAN FRANCISCO, Oct. 17.—R. H. Keaton, president of the Keaton Tire and Rubber Company, which recently established its factory in San Francisco, is making a tour of the Pacific Northwest, in company with C. C. Jack, manager of the Seattle and Portland branches, who recently was promoted as a reward for his work as manager of the Portland branch.

SERVICE SCHOOL HELD

PORTLAND, Ore., Oct. 17.—About 75 fleet service mechanics and Dodge service station men have just completed a two-day course on repair and service work at a school held at the plant of Braley & Graham, local dealers. Robert Word, representing the Dodge factory, and Tim Baldwin, of Graham brothers, went into the details of this work on Dodge cars and Graham brothers' trucks. C. A. Lennon, district representative of the factory, and H. M. Russell, field representative, were here for the school.

McFarlan Produces Eight Series in Eleven Models

Prices and Body Types Same as SV Line Except for Addition of Town Car

CONNERSVILLE, Ind., Oct. 17.—McFarlan Motors Corp. is now producing a stright eight model which is offered in eleven body models ranging in price from \$2,650 to \$4,600. The chassis has a 131 in. wheelbase and the engine is a Lycoming H with a bore of 3-3-16 in. and a stroke of 4-1-2 in. The body types making up the new line are identical in prices and equipment with those sold on the single valve, six-cylinder McFarlan chassis except that a town car at \$4,600 has been added.

The fuel system on the new eight includes a vacuum tank which feeds from the 18 gal. capacity main tank to a 11-2 in. Schebler carburetor with vertical outlet. The starting, lighting and ignition units are of Delco make and the storage battery has a rating of 120 amp. hr.

The clutch is a Borg & Back and together with the Warner transmission, is assembled with the engine in a unit power plant. Universals are of the metallic type made by the Universal Machine Co. and the axles are Timkens. The rear axle is a semi-floating unit with a final reduction of 5.1 to 1 and, as in the six-cylinder models, its torque is taken by an arm. Chassis lubrication also is similar to that used on the sixes, all important bearings being lubricated by oil-cups with wick feed. Springs are semi-elliptic, those in the rear being 58½ in. long. The steering gear is a Ross.

The braking system consists of four-wheel, hydraulic service brakes with the emergency on the transmission, and is identical with that used on the single valve model. Balloon tires, 32x6.20 in., mounted on natural finish artillery wheels are standard. All body models have front bumpers, snubbers, automatic windshield wipers, sun-visors, cowl ventilators, rear vision mirrors, heat indicators, rear traffic signal, clock and ignition and transmission locks.

Following is a list of models furnished on the eight-cylinder chassis:

2-pass. roadster	\$2,650
4-pass. roadster	2,900
5-pass. touring	2,650
7-pass. touring	2,750
5-pass. sedan	3,180
4-pass. coupe	3,180
5-pass. coach brougham	3,180
7-pass sedan	3,280
5-pass. suburban sedan	3,380
7-pass. suburban sedan	3,480
Town car	4,600

Several changes also have been made in the two six-cylinder chassis. The SV models now have Delco electrical equipment and a larger battery which is interchangeable with that used on the new eight. The rear axle reduction on this chassis has been reduced from 4.90 to 1 to 4.27 to 1 and its exhaust pipe diameter has been increased to 2¼ in. The capacity of the fuel tank has been de-

creased to 18 gal. and is interchangeable with the tank on the eight. On the TV chassis, a Borg & Beck clutch has replaced the former multiple disk unit, De-Jon electrical equipment has been adopted and the battery capacity has been increased.

Wills Ste. Claire Names Moorman Vice President

MARYSVILLE, Mich., Oct. 17.—At a meeting of the board of directors of Wills Sainte Claire, Inc., A. H. Moorman was elected to the office of the vice-president in charge, according to an announcement by C. Harold Wills, president of the company.

Mr. Moorman has been with Wills Sainte Claire, Inc., since 1923 in the capacity of treasurer and controller and prior to this he was associated with the Security Trust Company of Detroit.

In a statement made by Mr. Moorman, the company is in a very strong financial position with a large cash reserve and unfilled orders on hand in such quantities as to insure an unusually large production during the fall and winter months.

ELEVATED AIDS PARKING

PHILADELPHIA, Oct. 17.—An unusual expedient to relieve city traffic congestion has been taken by the Philadelphia Rapid Transit Co. in establishing parking areas at convenient points on its lines. Parking tickets are issued at 25 cents, which includes round trip fare on the lines of the company, reducing the parking charge to 10 cents. The two areas are at points convenient to motorists from outlying communities, who will be enabled to leave their cars all day and continue their trips to the central part of the city by elevated train. In the downtown section of Philadelphia congestion is so bad that parking is virtually impossible and the movement of motor vehicles and street cars are seriously impeded.

25 Years Ago In the Automobile Industry As Recorded In MOTOR AGE

(From MOTOR AGE of Oct. 25, 1900)

Tagged in Philadelphia

Every self-propelled vehicle in Philadelphia is now tagged, the carrying of the number being compulsory in the park. The majority of the vehicles, however, are decorated with their numbers at all times, the tag being comparatively small, and interfering little, if at all, with their appearance.

Progress in Buenos Aires

Mail advices from Buenos Aires state that the use of electric and oil power motor cars in the Argentine capital is developing rapidly. Not only heavy delivery wagons, but also luxurious carriages driven by oil and electricity are

Auburn Plans Note Issue to Allow 4-Cylinder Line

Stockholders to Meet for Decision on Increase of Capitalization Nov. 14

AUBURN, Ind., Oct. 17.—At a meeting of directors of Auburn Automobile Company it was decided to call a meeting of the stockholders for Nov. 14, to vote on proposal to authorize increase of capital stock of the company from 60,000 to 120,000 shares.

It was also decided that the selling organization was not broad enough and could be materially strengthened by the addition of a four-cylinder car to the company's present line of sixes and eights and in order to provide additional working capital for this program it was decided to ask the stockholders to ratify the directors' action in the issuance and sale of a short term note issue.

Net earnings for the third quarter of 1925 after deduction for taxes and depreciation were \$305,949.94, equal to \$5.10 per share on the 60,000 shares outstanding.

For the nine months of this year earnings have amounted to \$10.92 per share. September 30, the total current assets amounted to \$1,993,639 against total current liabilities of \$533,718, leaving a working capital of \$1,459,921.

DENVER PLANS SHOW

DENVER, Colo., Oct. 17.—Secretary Tom Braden, of the Denver Automobile Dealers' Association has announced the appointment of Myron L. Smith, president of the Sherman Auto Company of this city, as chairman of the committee to have charge of the annual automobile show. February 2 to 6 inclusive have been chosen as the dates, and the show will be held as usual in the Municipal Auditorium.

frequently to be met with on the streets of that city.

The Industry in Italy

The motor car industry in Italy is still in its infancy. The concerns of importance have started works in Milan, viz.: Prinetti Stucchi, having a very large plant in connection with their carriage and bicycle works, and C. Bianchi. There is also one automobile establishment in Rome, but it is of recent creation and has not reached any importance. A certain number of automobiles of foreign make have been introduced into Italy and have met with public favor, which should be encouraging for the future development of that industry in Italy.

Automobile Makers Planning to Operate Their Own Ships

May Buy Vessels From Shipping Board to Cut European Transport Costs

WASHINGTON, Oct. 17.—Negotiations looking to the purchase of a fleet of fifteen or twenty Government ships for use in exporting automobiles from Detroit to European and other foreign ports have been initiated here by representatives of four important Detroit automobile concerns, it is admitted at the shipping board. Hudson, Dodge, Chrysler and Hupp are understood to be the interests behind the plan.

While the shipping board describes the deal as only "in the making," it is learned the automotive men involved have already gone so far as to consult the Department of Commerce as to trade routes and foreign markets. It is further understood that the advice of J. Walter Drake, assistant secretary of commerce and a Detroit automobile man has been sought.

Consummation of the plans would involve upward of \$1,000,000 in outlay for government tonnage. The vessels under consideration are the 4,200-dead-weight-ton, lake type, oil-burning steamers. The shipping board price for this type of vessel when sold for operation is about \$50,000 each.

The tentative plan of the automobile companies is to put into service a fleet of steamers to carry automobiles and accessories direct from Detroit to foreign ports. The route of the ships would be through the Great Lakes to Montreal and then to European ports, southward to South America, or through the Panama Canal to the Far East.

NEW PARTS FACTORY

CHICAGO, Oct. 17.—The Imperial Molded Products Corp. has been formed in Chicago with a factory at 2925 W. Harrison Street, controlled and financed by the Imperial Brass Manufacturing Co. The new company will begin immediately the production of molded Bakelite parts by high pressure steam. Among the products which will be turned out will be parts for the automotive, electrical, building, musical instrument, radio, plumbing, phonograph and many other industries. Officers are Paul Tietz, president; James T. Greenlee, secretary; and Frank McNellis, treasurer.

ATLANTA HOLDS SHOW

ATLANTA, Oct. 17.—The annual fall automobile show in Atlanta was held the ten days of the Southeastern Fair, Oct. 8 to 17 inclusive, with nearly all the members of the Atlanta Automobile Association taking part, making the show the largest held here in recent years, equally as large as the regular spring show held annually during the five years prior to 1925. There was no spring show in Atlanta this year. The show was

held in the Automobile Building on the Southeastern Fair grounds, and attracted thousands of visitors, the various new models shown attracting the primary interest.

HEATER PRODUCTION UNHURT

MONROE, Mich., Oct. 17.—Production in the heater division of the Monroe Auto Equipment Manufacturing Company, part of whose plant was completely gutted by fire early last Saturday, has not been affected, C. S. McIntyre, president of the company, said today. The fire destroyed the pump plant of the company, making it necessary for the company to re-build. Plans have been made by President McIntyre which call for a larger plant and one which will be able to exceed the output of the plant burned down.

HYDRAULIC BRAKE MOVES

DETROIT, Oct. 17.—The Hydraulic Brake Co., announces the removal of its general offices and experimental division in Detroit, from 5833 Russell street, at Medbury, to 2843 Grand boulevard, East, at Oakland.

DEALERS GREET PHILLIPS

SAN FRANCISCO, Oct. 17.—Direct dealers in the Dodge car in this section of the Pacific Coast, to the number of 25, were hosts at a luncheon to Ned B. Phillips, newly appointed Dodge Brothers district representative for the San Francisco territory. Phillips returns to California after an absence of about two years, directly from the Detroit office. He formerly was connected with the district office in San Francisco.

Clymer Forms New Company to Make Patent Air Gage

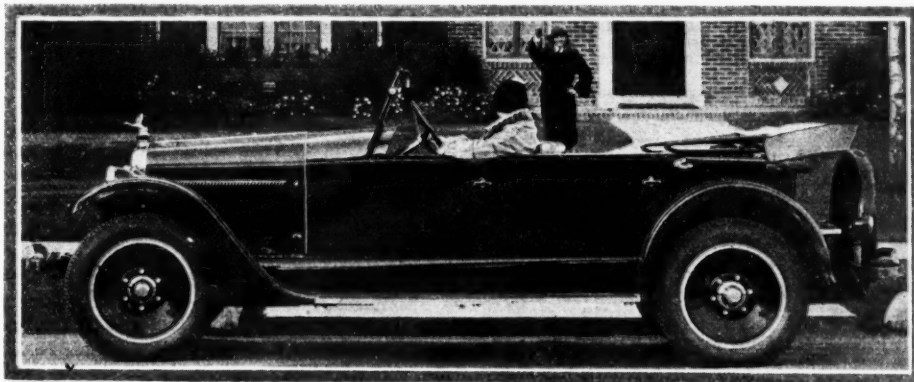
Inventor of Windshield Spotlight to Put Latest Product on National Market

DENVER, Colo., Oct. 17.—Floyd Clymer, well known Denver inventor and driver, is the head of the newly organized Clymer Motors Products Company, 1526 Lincoln street, where it manufactures and distributes the recently patented Clymer Automatic Air Gage.

This is a device to be attached between the tire valve and the air hose, in such a manner that the air must pass through it before entering the tire. The user adjusts a thumb screw indicator to the amount of pressure desired in the tire, pushes the gage onto the valve stem, and applies the hose. When the proper pressure is attained, the gage automatically shuts off the flow of air, and a whistle blows to notify the user. There can be no danger of over-inflation for the hose might be left attached for hours without additional air getting into the tire, and the whistle would continue to sound till the hose was disconnected. This gage eliminates the numerous readings required by other types.

Clymer is the inventor of the Clymer Windshield Spotlight, which scored an immediate success upon its appearance some five years ago. The new company has started on intensive sales campaign, and is already shipping to eastern points, and rapidly arranging for national distribution.

Grey Goose Traveler Latest in Wills Sainte Claire Line



Side view of the Grey Goose Traveler added to the Wills Sainte Claire line

MARYSVILLE, Mich., Oct. 17.—Wills Sainte Claire, Inc., has added cabriolet roadster and Grey Goose Traveler models, listing at \$3,785 and \$3,300 respectively to its eight-cylinder, de luxe line. In addition, list prices on standard roadster and the Grey Goose Traveler models of the six-cylinder line have been increased \$315 to \$2,800 and the eight-cylinder de luxe roadster has been increased from \$3,185 to \$3,300.

The three models affected by the price increases now are furnished with front

and rear bumpers, and spare tire in addition to the equipment formerly carried by them.

Cabriolet roadster and Grey Goose Traveler models have been eliminated from the standard eight-cylinder line.

Besides the equipment supplied on the cabriolet roadster and Grey Goose Traveler when these models were included in the eight-cylinder standard line, the former now has sun visor and door lock and the latter front and rear bumpers and sun visor.

Industry Given But 1 Hour to Make Tax Repeal Plea

House Committee to Hear Representatives of Many National Bodies Oct. 24

WASHINGTON, Oct. 17.—The brief space of one hour will be allotted representatives of the National Automobile Chamber of Commerce and the American Automobile Association on the afternoon of Saturday, October 24, to convince the House Ways and Means Committee that war excise tax on automobiles, accessories and parts should be repealed. Each of the two organizations will be given half an hour.

While it is admitted this is a ridiculously short period to present arguments involving an assessment on the industry of approximately \$141,000,000, members of the House committee point out that so many interests are to be heard it is necessary to severely limit the time each is to consume.

It is expected that all of the automotive leaders representing every branch of the industry who met here several weeks ago in anticipation of the tax hearings will be present on October 24 and ready to testify. While H. H. Rice and Pyke Johnson, chairman and secretary respectively of the taxation committee of the N. A. C. C. are in South America, assurances are given that the other members of the taxation committee will be in attendance.

Following are the names of those expected to represent the automotive industry's abbreviated session before the committee:

George M. Graham, director, N. A. C. C.; Ernest N. Smith, general manager, the American Automobile Association; S. M. Jett, Rubber Association of America, Inc.; Walter B. Guy, National Automobile Dealers' Association; C. E. Quinn, Automobile Body Builders' Association; M. L. Hemmingsway, Motor and Accessory Manufacturers' Association; W. W. Cloud, National Association of Taxicab Owners; B. W. Ruark, Automotive Equipment Association and Automotive Manufacturers' Association; David S. Ludlum, C. C. Hanch and F. J. Haynes. The last three named are members of the taxation committee of the National Automobile Chamber of Commerce.

MORRIS ENTERS CANADA

TORONTO, Oct. 17.—The Morris Crowley and Morris Oxford English motor cars recently displayed at the Canadian National Exhibition are now on the Canadian market. Sales offices have been opened at 1262 Yonge Street, Toronto, under the direction of J. W. Pickavant, sole Canadian distributor.

PYROXYLIN GAIN LARGE

WASHINGTON, Oct. 17.—A gain of 125.9 per cent in the production of pyroxylin varnishes or lacquers was registered in the first six months of 1925 as compared with the last half of 1924, the Department of Commerce announces in publishing the results of its semi-annual survey of the paint and varnish industry. Other comparisons for the same periods show a gain of 3.1 per cent for paste

paints; 31.5 per cent for ready-mixed and semi-paste paints, and 13.6 per cent for varnishes, japans and lacquers, other than pyroxylin. The increase noted for pyroxylin products was apparently the result of the greater use of these finishes in the automotive industry. The statistics are based upon returns from 502 establishments, of which 67 produce pyroxylin varnishes or lacquers.

BIFLEX HOLDS SESSION

WAUKEGAN, Ill., Oct. 17.—The fifth annual sales convention of the Biflex Corp., manufacturers of Biflex Spring Bumpers, was held recently at the general offices of the company here. Additional members of the sales force, who have been added during the last year, made the convention the largest ever held by the company. F. B. Caswell, vice-president and director of sales for the Champion Spark Plug Co., was the principal speaker at the banquet which closed the convention.

W. D. Patterson Resigns In Corporation Reorganization

OAKLAND, Cal., Oct. 17.—W. D. Patterson, originator and organizer of Patterson Parts, Inc., has resigned. The Fresno branch has been closed and the Portland branch sold in a complete reorganization of the corporation, in the course of which Mr. Patterson lost control.

J. B. McKay, sales manager, also is out of the corporation, and William Tenant, former comptroller and leader of the stockholder opposition to Patterson, is directing the operation of the company.

Three reasons are assigned for the reorganization of Patterson Parts which had branches in every large city on the Pacific Coast. First, that sales volume of about \$525,000 a year was too limited for the number of branches; second, that the overhead was too great for the gross margin; and third, that there was no reserve capital, the concern having expended on the net earnings.

Mr. Patterson established the corporation in Oakland about 15 years ago and is now in the east endeavoring to connect with lines to represent on the Pacific Coast.

CARPENTER GOES TO EUROPE

NEW YORK, Oct. 17.—R. E. Carpenter, vice-president of the Spicer Manufacturing Corporation of South Plainfield, N. J., has sailed for a six weeks' business trip to England and the Continent. Mr. Carpenter will be present at the Olympic Auto Show in London and will later spend several weeks in travel on matters pertaining to the corporation's foreign sales.

MOVES CANADIAN OFFICE

MONTREAL, Oct. 17.—The sales department of the Black & Decker Manufacturing Co., Ltd., now located at Montreal, will shortly be moved to Toronto. The factory will remain at Montreal. The Canadian manager of the company, A. J. Hopkins, has tendered his resignation and leaves for the South.

G. M. Sales to Consumers Gain 35,047 Over 1924

Total Dealer Volume Is 83,612 Cars for September—Trucks Set Record

DETROIT, Oct. 17.—The sale of General Motors cars by dealers to users in September totaled 83,612 passenger cars and trucks, a gain of 35,047 over September, 1924. The number sold in September, 1924, was 48,565.

The sales of cars and trucks by the various manufacturing divisions of the corporation to dealers throughout the country for September totaled 88,379, which is the largest sale in any month in the history of the corporation.

The sales by dealers to the ultimate consumer is the second largest since April, May being the other month to exceed it.

	Dealers Sales to Users 1924	Divisions Sales to Dealers 1925
January	25,593	30,642
February	39,579	49,146
March	70,594	75,527
April	97,242	85,583
May	87,488	77,223
June	75,864	71,088
July	65,872	57,358
August	78,638	76,462
September	*83,612	*88,379

*These preliminary figures include passenger car and truck sales in the United States, Canada and overseas by the Chevrolet, Oldsmobile, Oakland, Buick and Cadillac manufacturing divisions of the General Motors.

Bert Dingley Is Selected Service Manager of Stutz

INDIANAPOLIS, Oct. 17.—Fredrick E. Moskovics, president of the Stutz Motor Car Company of America, has announced the appointment of Bert Dingley as service manager for the Stutz organization. Mr. Dingley was internationally known as a racing driver from 1904 to 1914, when he held championships in Europe and America, and he was one of the leading drivers in the old days of the Gordon-Bennett and Vanderbilt races. In commenting on the appointment Mr. Moskovics said:

"It was considerably over twenty years ago when Bert Dingley started giving service on automobiles and his entrance into the ranks of racing drivers came only after he knew intimately every part of a car from taking care of it. His success in racing was largely due to this intimate knowledge of a car's construction and operation.

"He has sold automobiles and has a practical knowledge of dealers' problems, but above all, he is an authority on motoring service.

"Mr. Dingley's experience in building racing cars from the days of the old Pope-Toledo, Chalmers, Simplex and Thomas-Detroit, was supplemented by production experience during the war in the Bureau of Aircraft during the production of the famous Liberty engines. He has had charge of inspection work on body and chassis building, painting and testing in some of the leading automobile plants in the country."

Rating Committee of Motor Truck Industries Will Meet

Study Will Be Made of Reports From Members in Standardization Plans

BUFFALO, N. Y., Oct. 17.—J. R. Spraker, general manager of the Atterbury Motor Car Company and chairman of the rating committee of Motor Truck Industries, Inc., states that he will call a meeting of the rating committee for one day during the last week of October, probably to be held in Detroit, to study the reports made by the various members on the blue-print questionnaire which Mr. Spraker recently sent to members of the committee.

This questionnaire contains blank for filling in size data on 22 different points involving the standardization in each one of the four classes of trucks under study of the seat, frame, steering gear, dash openings, tires, front spring and rear spring.

It is expected that this meeting will serve to produce out of the mass of suggestions and recommendations, material for a practical codification of standards which can be submitted at the Washington meeting of the organization during the week of November 8.

NEW HUPP DEALERS

DETROIT, Oct. 17.—New dealers appointed by the Hupp Motor Car Corp. include:

Portage Garage, Portage la Prairie, Manitoba; Motors Limited, Brandon, Manitoba; W. W. Robertson, Jr., North Tonawanda, N. Y.; Jerwin Motor Co., Lima, O.; R. L. Kohn, Leipsic, O.; A. I. Mathews, Ortonville, Minn.; Minot Motor Co., Minot, N. D.; Williams Bros., Riverside, Cal.; Streeter Motor Co., Great Falls, Mont.; Beauchamp M. Garage, Penstang, Ont.; Geo. H. Ferguson, Collingwood, Ont.; C. L. Robins, Niagara Falls, Ont.; Motor Sales & Service Co., East Ely, Nev.; Bayers Auto Sales, Inc., Long Island City, N. Y.; E. L. Carpenter, Tekonsha, Mich.; C. E. Minnick, Rexford, Kan.; Bingham Motor Co., Troy, O.; E. R. Jackson & Co., Osceola, Ark.; Carroll Motor Sales, Pt. Huron, Mich.; Morrison Motor Sales, Wyandotte, Mich.; A. M. Powell, New London, Conn.; Raulerson & Boon, Okeechobee City, Fla.; Shenandoah Motor Co., Winchester, Va.; Carroll Sanders, Gillett, Ark.; Phil Smith, Cumberland, Md.; Alva E. Hatch Auto Agency, Chico & Oroville, Cal.; T. H. Tupman, Pasadena, Cal.; Carbondale Welding Co., Carbondale, Pa.; Horn & Boyd, Bicknell, Ind.; S. W. Jones, Priest River, Idaho; A. A. Monnett, Walla Walla, Wash.; Miesner's Garage, Cape Girardeau, Mo.; E. H. Robinson Auto Sales, Chicago; Crawford-North Motor Sales, Chicago; H. F. Butterfield & Son, Ottawa, Ill.; O. F. Bielke, New Auburn, Minn.; Robert F. Wells, Inc., Stony Brook, N. Y.; Kruger Motor Car Co., Inc., Rosebank, S. L. N. Y.; Banks Motor Corp., Ardmore, Okla.; F. J. McHugh, Stamford, Conn.

SHOW DATES ANNOUNCED

LOUISVILLE, Oct. 10.—February 15-20 has been announced as the dates of the Louisville Automobile Show. The eighteenth annual exhibition will be staged under the auspices of the Louisville Automobile Dealers' Association.

Voisin "Equips" Cars With Paint Kit

PARIS, Oct. 3.—(By Mail).—To encourage clients to maintain their paint work in good condition, the Voisin Company of Paris furnishes a pot of pyroxylin paint and a small sprayer with every car sold. The sprayer is no bigger than a fountain pen and the pressure is obtained by blowing through a tube. This enables any damaged parts to be touched up almost instantly with perfect results. Voisin is the first French manufacturer to adopt pyroxylin painting for the whole of his output. Practically all his bodies are fabric leather construction, and the painting is thus limited to the hood, fenders and running gear, which usually are in black. In certain cases Voisin is using pyroxylin paint on fabric leathers. This is particularly advantageous in the case of repair work, for when a fabric panel is changed it need not be the same color as the original. The grain of the leather shows up perfectly under the paint.

French Racing Board Plans To Make Competition Safer

PARIS, Oct. 3.—(By Mail).—Alarmed by the long list of fatal accidents which have marked the past racing season, the Racing Board of the Automobile Club of France is studying ways and means to make competitions safer. Their suggestions will be brought before the International Racing Board, at its general meeting to be held in Paris on October 28, with a view to international adoption.

Among the proposed changes is that an elimination race or races shall be held for the French Grand Prix, and that the final shall be reduced to about 250 miles. No accident, however, has ever happened in Europe owing to the high number of competitors on the track or road.

The average number of starters in the leading events during the last five years is 15, on tracks or road circuits having an average length of 15 miles. Experience has shown that races of more than 500 miles unnecessarily fatigue the driver and weary the public.

COLUMBUS SALES GAIN

COLUMBUS, O., Oct. 17.—Sales of new automobiles in Franklin County in September totaled 1,131, which was an increase of 184 over September of 1924 when 947 new cars were sold. This is the gist of a report made by County Clerk Harold Gockenbach, who is charged with the duty of filing duplicate bills of sale on all motor car sales. New models, improvements and price cuts, many of them dating from August 1 are given as the causes for the increased sales.

Many Changes Recorded in Trade Personnel of Boston

Apperson Discontinues Branch in New England City—Studebaker Promotes Two

BOSTON, Oct. 17.—Changes continue to take place in the motor trade in this city the latest being the discontinuance of the Boston branch by the Apperson Motor Company, of Kokomo, Ind. Charles A. Perry, who has been manager, has started on a month's vacation.

Joseph S. Donovan, owner of the Donovan Motor Car Company, Studebaker distributor for Boston, has made Henry J. Kelley, his sales manager, vice-president of the company, and W. E. Dermody, general manager. Mr. Kelley has been with Mr. Donovan 12 years, entering the motor industry with this company and for the last six years has been sales manager. Mr. Dermody had been a branch manager for Goodyear Tire & Rubber Company at Boston and other places, and was later with the Boston Autocar Company, and recently had a Ford agency here. He takes the position left vacant by the death of Mr. Benson.

John J. Mahoney, formerly part owner of John & Arthur, has joined the Malton Specialty Company, 173 Massachusetts avenue, where he is managing its sales.

The Stewart Truck Corporation, of Buffalo, N. Y., has opened its own sales branch for the Boston territory at 195 Massachusetts avenue, Cambridge.

Arthur J. Dorley has joined the Utterback-Gleason Company, Kissel distributors, and also sub-dealers for the Hudson-Essex, as used car manager; he had been with the Willys-Overland forces until he assumed his new position.

NEW LOCOMOBILE DEALERS

BRIDGEPORT, Conn., Oct. 17.—The Locomobile Company of America, Inc., announces the appointment of the following companies as dealers to handle the new Junior Eight car, deliveries of which are now being made by the factory at the rate of 25 daily:

Leo G. Lob, New Orleans; Lewis S. Heinen, Milton, Pa.; Locomobile Company of America, Inc., and Locomobile Company of West Carolina, Charlotte, N. C.; Darden Motor Company, Richmond, Va.; Stearns Akron Company, Akron, Ohio; Orange Locomobile Company, East Orange, N. J.; MacDonald Auto Company, Salem, Ore.; O. T. McCoon and C. C. Dunbar, Yuma, Ariz.; Locomobile Company of Waltham, Waltham, Mass.; Kendall Auto Company, Pasadena, Cal.; Cornwall Motor Company, Elgin, Ill.; Locomobile Company of Trenton, Trenton, N. J.; Montclair Locomobile Company, Montclair, N. J.; C. A. Owens, Marion, Ohio; Arney Motor Company, Alliance, Ohio; Wisconsin Locomobile Sales, York, York, Pa.; Gilbert Katz, Long Branch, N. J.; California Motor Company, California, Pa.; Latrobe Locomobile Company, Latrobe, Pa.; Locomobile McKeesport Company, McKeesport, Pa.; Superior Garage Co., Perth Amboy, N. J.; Roberts Motors, Long Beach, Cal.; James Schlemmer, Canton, Ohio; Connecticut Locomobile Company, New Haven, Conn.; Jackson Diggs, Sacramento, Cal.; Jackson Diggs, Marysville, Cal.; Locomobile Company of Oakland, Oakland, Cal.

Safety Lessons in Schools Help Reduce Car Mishaps

Five Per Cent Less Fatalities This Year Expected by Committee

NEW YORK, Oct. 17.—That the number of fatal accidents throughout the United States this year may be less than last year and that a nation-wide 5 per cent reduction in child traffic fatalities is being accomplished by safety and traffic instruction in public schools, was declared by John C. Long, secretary of traffic planning and safety committee, in making public results of this committee's survey among 1,800 city and rural schools.

The total August fatalities as reported by city health departments was 390 or five-tenths of 1 per cent under August, 1924, and five-tenths of 1 per cent under July, 1925, but the total for the first eight months of this year is 6 per cent larger than for the same period last year.

The survey shows that 62 per cent of city schools reporting and 38 per cent of country schools are giving traffic and safety instructions, mostly in connection with courses in civics. The survey results are highly encouraging, according to George M. Graham, chairman of the committee, who says that whenever every school includes regularly in its curriculum teaching that helps the child to adjust itself to this new age, still further reduction of child fatalities will be realized.

The recent survey also shows that 50 per cent of the city schools and 48 per cent of country schools give safety and traffic instruction as a regular part of their curriculum.

FRANCIS GOES TO BOSTON

CINCINNATI, Oct. 17.—W. A. Francis, manager of the Ford Motor Company branch at Cincinnati for the last three years, has received orders to proceed to Boston to assume charge of the Ford plant in that city. He is to be succeeded here by W. D. McTaggart, who has held an executive position with Ford at the Philadelphia branch. Mr. Francis came to Cincinnati from New York and was formerly with Ford at the Detroit factory.

Delage Wins Europe's Last 122-inch Event of Season

PARIS, Sept. 29.—(By Mail).—Albert Divo, driving a supercharged twelve-cylinder 122-inch Delage, won the San Sebastian Grand Prix 439.6 mile road-race, Sunday, at an average speed of 76.6 miles an hour. Robert Benoist finished second, also on a Delage, 10 min. 42 sec. behind the winner, and Rene Thomas, the captain of the Delage team was third, 11 min. 25 sec. in the rear of the leader.

This race, which is the last 122-inch event to be held in Europe, united 13 starters, comprising four Delages, six non-supercharged Bugattis, a Sunbeam,

an Eldridge, and a Soriano. The King of Spain made a preliminary lap of the 11-mile course and gave the start of the race. The Delage cars lead throughout and appeared to be the fastest on the course, although Constantini, on a straight eight Bugatti, made the record lap in 7 min. 57 sec., compared with 8 min. 6 sec., the fastest lap by Divo. Constantini had to withdraw when he lost a rear wheel off his car.

In trying to pass Count Masetti's Sunbeam on a bend, Torchy, one of the Delage drivers, ran off the road, and was killed instantly. This driver was a new member of the Delage team, selected from the firm's test department.

NEW CLEVELAND DEALERS

CLEVELAND, O., Oct. 17.—New dealers added by the Cleveland Automobile Co. include:

Quality Service Garage, Bay City, Mich.; Pekerik's Garage, Lorain, O.; The L and W Motor Sales, Elyria, O.; Henry Berlitz, Hazleton, Pa.; Phinney Motor Company, Fond du Lac, Wis.; Goodfellow Garage, St. Louis, Mo.; Scranton Chandler-Cleveland Co., Scranton, Pa.; Motor Sales Co., S. Boston, Mass.; Spaceks Motor Sales, Cicero, Ill.; Atlas Sales and Garage, W. Philadelphia, Pa.; Keeling Auto Sales Co., Toledo, O.; H and L Motor Sales Co., Shenandoah, Pa.

Indiana Car Titles Show Gain of 75,334 in Year

INDIANAPOLIS, Oct. 17.—Registration of Indiana motor vehicles for the fiscal year ending September 30 shows that the state made a gain of 75,334 motor vehicles and that now there are 711,065 motor vehicles bearing Indiana license tags as against 635,731 for a year ago. The average gain for all sorts of vehicles was about 12 per cent, while trucks gained 14 per cent and buses jumped from 394, registered as in operation in the year ending September 30, 1924, to 3,281 now shown as registered up to the first of October.

This last comparison is not accurate as during part of 1924 there was no hard and fixed separation of buses from trucks and the 1924 bus figures were therefore in part estimates by the state. Trucks made by far the biggest gain from 81,882 in 1924 to 91,247 this year.

Passenger cars jumped from 551,123 a year ago to 615,731 for the current year. Motor vehicle license fees, including the certificate of title fees totalled \$4,885,000.25, a gain of \$533,373.62 in state revenue from this source with no increase in the general license fee rates.

PORTER JOINS FIRESTONE

QUINCY, Ill., Oct. 17.—J. Irvin Porter, for several years manager of the Jenks Motor Sales Company here, distributor of the Paige and Jewett lines, has resigned to become assistant general manager of the Firestone Tire Company of the St. Louis district. Mr. Porter was formerly a distributor of cars at Monmouth, Ill. His successor with the Jenks company is Enos Hoover, formerly with the Bowman Motor Company, and also the Quincy-Cadillac Company.

Nash Net Income for Three Months Totals \$3,840,268

Amount Is More Than Double That for Period Year Ago. Dividend Declared

KENOSHA, Wis., Oct. 17.—At a meeting of the directors of the Nash Motors Company, President C. W. Nash reported that for the three months ending August 31, 1925, after deducting expenses of manufacturing (including depreciation) selling and administrative, and providing for local taxes, and state and federal income taxes, the net income amounted to \$3,840,268.25, as compared with \$1,205,766.09 for the same period a year ago.

A quarterly dividend on preferred stock of \$1.75 was declared payable November 1 to stockholders of record October 20.

The value of sales for the above three months showed an increase of 124.7 per cent over the same period a year ago.

Commenting on the condition of the company and the business outlook, President Nash said:

"Our company has experienced a greatly oversold condition since July, 1924. In order to place ourselves in a position whereby we might more nearly give our dealers the goods they require, when they require them, we have built additions to our plant and have purchased a large quantity of new machinery so that output may be increased to conform with demand."

NEW DURANT ZONE

NEW YORK, Oct. 17.—Colin Campbell, vice-president, Durant Motors, Inc., announces the establishment of a new zone office for the sale of Star and Durant cars at 1312 Starks building, Louisville, Ky., in charge of C. J. Beeching, sales manager. N. B. Reisinger has been appointed sales manager of the Cincinnati zone, replacing B. A. Rupprecht, recently made regional sales manager of the southeast region.

MULCH TOURS WEST

FLINT, Oct. 17.—R. H. Mulch, vice-president and general manager of the Flint Motor Company, has left for a trip to the Pacific Coast. He will visit Los Angeles, Oakland, Seattle and Denver for the purpose of studying business conditions, and after his return from the West, will cover the eastern territory in the same fashion.

UTAH TITLES INCREASE

SALT LAKE CITY, Oct. 17.—Approximately 10,000 more motor vehicles were in Utah at the end of the first nine months of the present year than on the same date last year. The number of cars in the state on September 30 were 86,002 as compared with 76,066 on Sept. 30 last year. The fees received during the first nine months of the year amounted to \$536,197.93 compared with \$478,734.67 for the same period last year.

French Engineer Advises One Model Built in Quantity

Believes European Makers Spend Too Much Time and Money on Varied Lines

PARIS, Oct. 3.—(By Mail).—An immediate sale of 500 cars per day is possible to any French automobile manufacturer who will concentrate on a single model designed and produced on economical lines, declares Engineer Salomon, chief engineering of the Citroën Company from its inauguration to within a few weeks ago.

"Immediately after the Armistice the French industry appeared to have realized the necessity of quantity production on economical lines and plans were laid with a view to working up to 500 cars per day from a single factory. These plans have not materialized and at the present time there is not a single automobile manufacturer concentrating on one model.

"The most popular type of car in France at the present time is a four-passenger with a four-cylinder engine having a European rating of 8 to 10 h.p. The biggest producers of this type are Citroën, Renault, and Peugeot; these three, together with various small makers are building about 350 cars of this type per day, while Ford, who is handicapped by an American type car not entirely suited to French conditions, is alone averaging 100 cars per day.

"If, instead of three big firms and a dozen small factories, there was one well-organized establishment concentrating on the 8-10 h.p. European type of car, cost could be cut to such an extent that production would immediately jump to 400 or 500 cars per day."

According to M. Salomon, who has made a close study of the possibilities of automobile expansion in France, there is an immediate market for 800,000 cars.

HANDY PLANTS MOVE

DETROIT, Oct. 17.—The Handy Governor Corp. and its subsidiary, the Handy Cleaner Corp., increased manufacturing facilities and have moved their main plant at 3925 West Fort Street, adding 12,000 feet of space to their present factory at 3021 Wabash avenue. The addition is necessary to care for increasing business in governor equipment, principally on Fordson tractors and increased production on Handy air cleaners, which have been adopted as standard by several of the important car manufacturers.

FORBES TO CLEVELAND

SALT LAKE CITY, Oct. 17.—H. S. Forbes, manager of the Salt Lake City, Utah, branch of the Kelly-Springfield has been appointed manager of the company's Cleveland, Ohio, branch. He is succeeded by W. P. Morton who has been a salesman for the company in southern California with headquarters in Los Angeles.

Department Store Sells Airplanes

NEW YORK, Oct. 17.—Airplanes as part of a department store stock have been introduced by the John Wanamaker store here. In 1909 the Wanamaker store sold planes, a replica of the plane in which Bleriot first crossed the English channel. The store now is exhibiting in its new airplane department on the ground floor, the J. W. I., first Ford of the air, manufactured by the Stout Metal Airplane Co. and just flown to Mitchell Field, L. I., by Leroy Manning. This is the first of a consignment of ten Ford planes to the Wanamaker store, to which was also delivered the first Ford automobile in the New York district. The planes retail for \$25,000.

CHEVROLET PLAN EXPLAINED

ST. LOUIS, Oct. 17.—W. A. Blees of Detroit, Chevrolet official in charge of the company's relations with the General Motors Acceptance Corporation, General Motors financial agency, was in St. Louis to attend a meeting of St. Louis Chevrolet dealers and explain the new time payment plan for purchasing automobiles recently announced by General Motors Acceptance Corporation. All of the metropolitan Chevrolet dealers in the district attended the meeting which was held at the St. Louis Chevrolet plant.

MOVE AND SLICK UP

NEW ORLEANS, La., Oct. 17.—The fall season that opened October 1 in New Orleans saw many changes of address of automotive places and many improvements in buildings. The summer has been embraced by many distributors and jobbers as a time to "slick up" generally.

In the list below the new address is given as effective Oct. 1: Maloney Motor Car Co., distributors of Hudsons and Essex, 721 St. Charles Street, Goodrich Rubber Co., 208-210 South Peters Street, Adams Motor Co., distributors of Cleveland and Chandler, 620 Howard Avenue, United Motor Car Co., distributor of Peerless and Hupmobile, Go-Ro Building, Carrollton Avenue, United States Rubber Co., 201 South Front Street, Motor Sales & Service, Inc., Chrysler distributors, 1742 St. Charles Avenue.

TOLEDO EMPLOYMENT UP

TOLEDO, Oct. 17.—Employment in Toledo automotive plants is still increasing, showing a gain of 325 workers in 51 plants last week, to bring the total up to 27,361 as compared with 16,529 at this time last year. Payrolls are now approaching the maximum point reached in April and May.

Coast Business Volume Is Cause of Staff Expansion

Many Promotions and Additions to Forces Are Announced in San Francisco

OAKLAND, Cal., Oct. 17.—Steadily improving sales throughout July, August and September compelled manufacturers, distributors and dealers in Oakland to make a number of promotions and to increase materially their sales forces beginning early in October.

Heading the list of changes was the appointment of Del Harder as factory manager of the Durant Motor Company of California, succeeding George R. Scott, recently made assistant general manager in charge of production at the Flint Motor Company plant, Flint, Mich.

Another promotion announced at the same time is that of Miles Fox to be superintendent of the Oakland plant of the Durant organization. In the same announcement from Norman De Vaux, active head of the Durant organization here, came the statement that James P. Cory has been appointed as another Star dealer for Oakland. He will operate as the Cory-Star Company. Cory has been an executive of the Star branch in San Francisco.

C. E. Root, vice-president of the Forman Motor Company, Peerless and Oldsmobile distributors in Oakland, has taken personal charge of the sales of the Peerless car.

The Locomobile Company of Oakland has been organized to handle sales of the Locomobile for the mainland side of San Francisco Bay, according to announcement by C. A. Boyer, manager of the Locomobile Company of California, Inc., of San Francisco. New models of the Locomobile are being shown by the Oakland company at its new showrooms, 2317-21 Broadway.

Frank Wishart, manager of the East Oakland branch, has been appointed sales manager of the main store, according to announcement by Harold D. Knudsen, Chrysler distributor for Oakland. At the same time, Frank Bell has been promoted to be manager of the East Oakland Branch at 4028 East 14th street.

Auto-Lite Concentrates All Production in Ohio Plants

TOLEDO, Oct. 17.—Concentration of all manufacturing departments of the Electric Auto-Lite Co., at Toledo and Fostoria, means the virtual abandonment of activities of the company at Poughkeepsie, N. Y.

Enlargement of the main plant at Toledo may be required to accommodate the new business brought here. At Fostoria the harness department has been moved to an up-town building owned by the company and formerly used as a warehouse for Allen cars.

DeJon products will be manufactured in the Toledo plant in the future.



Along Automobile Row



DENVER, Colo.—A new Hudson-Essex agency has been started at 676 Santa Fe Drive. The firm is Gordon-White, Inc.

DETROIT.—A new sales and service building on Gratiot and Leland streets is being built by the motor truck division of the Gottfredson Corporation to take care of Gottfredson owners in greater Detroit and Wayne county.

LITTLE ROCK, Ark.—The Jennings-Matt Motors, a new concern here, has taken over the agency for Chrysler automobiles, succeeding the Ray Robinson Motors.

BUFFALO, N. Y.—Kane Motors, Inc., has been appointed city dealer by the Buffalo Oakland Motor Co. Kane Motors was formerly a Ford dealer here.

COLUMBUS, O.—The Charles Zimmerman Sons Co., central Ohio distributors for Dodge Brothers, has taken over the High-Fifth Motor Co., and the Main Street Motor Co., as direct branches.

VANCOUVER, B. C.—Among British Columbia dealers recently appointed are Eve Brothers, Ltd., which will handle the Paige-Jewett line at Victoria, B. C., and Begg Motors Company, Ltd., distributors for Nash and Ajax cars in Victoria.

SALT LAKE CITY.—A. E. Tourssen, Utah distributor for the Oldsmobile, is opening a branch house at Provo.

MILWAUKEE.—The Bauer Cab Co., has been incorporated here with capital at \$25,000, to carry on a taxicab business.

LOS ANGELES.—The Packer Motor Company, Inc., Studebaker dealer, recently entered its new \$60,000 home built especially for its use.

DALLAS, Tex.—The employees of the Brigg-Brown Motor Company, Willys-Knight-Overland distributors and dealers, were guests of the heads of the company at a dinner in celebration of the conclusion of the first year of the company's business recently.

MOBERLY, Mo.—Louis Hunt, agent for the Chevrolet motor car in Moberly, recently remodeled the building at 510 West Reed street formerly occupied by the Towles Motor Co., and has moved his agency to the new location. The change was made in order to provide more room for the business.

PENDLETON, Ore.—Robert Simpson & Son are the new proprietors of the Chevrolet agency in Umatilla and part of Morrow county, with headquarters at Pendleton.

WHEATON, Ill.—The Wheaton Auto Sales, Inc., will open a Ford sales and service station in the Parker Building which it recently purchased.

PHILADELPHIA.—Budd Wheel Company, announces the appointment of the Joseph Woodwell Company as official service station in Pittsburgh.

ST. LOUIS.—Arthur G. Rahnberg has been appointed manager of the used car department of the Flint Motor Car Co., Chevrolet dealer.

ASHLAND, Wis.—George W. White, who had the Dodge motor car agency here for many years, has sold out to the Wallie Motor Car Co., which will continue the Dodge representation as well as its general garage and service station business. Mr. White recently took over the Hudson-Essex line and will continue that agency.

PORTLAND, Ore.—A new and improved used car department has been installed by Packard Sales & Service, Inc., here, under the direction of H. C. Berg, president. The additional used car sales facilities are divorced from the main sales.

MONROE CITY, Mo.—Messrs. Burnett and Yoeman of Clarence, Mo., have opened the Monroe City Chevrolet Co., operating a garage and Chevrolet agency.

SEATTLE.—The appointment of Rowland & Clark, well known used car merchandisers, as Westlake Avenue district dealers for Ajax cars has been announced by the distributors.

BLYTHERVILLE, Ark.—J. W. Shouse has obtained the Chevrolet automobile agency here.

LOS ANGELES.—Continuing its policy of establishing community sales and service stations, the Albertson Motor Car Company, Southern California Dodge distributor, recently opened a new establishment in the Beverly Hills district, with Chester R. Ploeser in charge.

MINNEAPOLIS.—B. L. Eckes Co., Inc., has opened a retail store at 41 Ninth street S., ground floor, featuring Bosch radio products, and handling also Bosch automotive products, with service station.

BARBERTON, O.—The Wheeler Reo Sales Co., has been chartered with an authorized capital of \$20,000 to deal in autos, trucks, parts and accessories.

DES MOINES, Ia.—The C. E. Cochran Motor company has opened an authorized Ford dealers' station at 1737-39 East Grand avenue and will maintain sales and service plant.

BARRINGTON, Ill.—The Barrington Garage, owned by G. N. Schauble, has taken the Nash agency for this district. Mr. Schauble will continue his Oakland agency which he has held several years.

SAN FRANCISCO.—Close & Clark has been appointed Pacific coast representative for the U. S. Electrical Tool Company. The local firm now carries Piel cut-outs, Gilmer fan-belts, Smith and Hemingway tools, and the products of the King Manufacturing Company.

ST. LOUIS.—Ray Blades, outfielder of the St. Louis Cardinals has been made vice-president of the A. J. Brock Motor Sales Co., Hudson and Essex dealer at 4360 Manchester avenue. A. J. Brock is president of the company and James J. Barrett is general manager.

OAKLAND.—R. C. Williams has been appointed head of the service department of the Lawrence-Rand Motor Company, Lincoln dealers in Oakland.

LOS ANGELES.—Fred C. Wood, formerly distributor of Oakland cars in Cincinnati, has been named general manager of Mutual Motors, Roamer distributors and Paige and Jewett dealers, here.

DETROIT.—Hugh J. Gaulty has been made retail store and sales manager for Willys-Overland, Inc., at the branch at 4400 Woodward Avenue. Charles Stead has been named as his assistant.

NASHVILLE, Tenn.—The Eisemann Corporation, of New York City, announces the recent appointment of the Thomas & Polk Co., 1209 Broadway, Nashville, as distributor for the Eisemann company in the Nashville and adjacent East Tennessee territory.

OAKLAND.—A. H. Bollong has been appointed head of the service department of the Forman Motor Company, Oldsmobile and Peerless dealers in Oakland. He formerly was with J. W. Leavitt & Co., of San Francisco.

BALTIMORE.—The Piedmont Motor Co., 891 Park avenue, Baltimore, has been incorporated with \$25,000 capital stock to operate a public garage and repair shop and a filling station.

MILWAUKEE.—Hupmobile has been added to the line of Art Lusty of Milwaukee, who has handled Stearns cars for the past eight years and latest models of both cars are now on display at the remodeled show rooms, 156 Farwell avenue. Associated with Mr. Lusty are Erwin Tank, formerly of the Allis-Chalmers Manufacturing Co., Sam Walls and E. L. Hospins.

OAKLAND.—W. V. Kearns, manager of the Howard Automobile Company, Buick distributors, has been elected a director of the Motor Car Dealers of Oakland, the local association of retailers.

UTICA, N. Y.—Announcement has been made by the Robischon Motors Co., Utica, Chrysler distributors, of the appointment of the B. F. M. Motor Sales Co., as Herkimer dealers.

JACKSON, Miss.—The Hines Motor Co., Chrysler distributors in Jackson, Miss., has opened a branch in Vicksburg under the charge of Keith Williams, formerly a member of the Hines sales staff.

FAYETTEVILLE, Ark.—The Charles B. Casey Motor Co., is the style of a new automobile establishment recently opened in Fayetteville, for the sale of Chrysler cars.

BALTIMORE.—The Baltimore Ruggles Truck Co., 1429 Maryland avenue, Baltimore, has been incorporated with \$15,000 capital to deal in Ruggles trucks.

WAYCROSS, Ga.—Ben Wilson, formerly manager of the Waycross Nash Motor Company, has opened a new sales establishment, to be known as the Wilson Motor Co. He will handle Chrysler cars.

SALEM, O.—The Steam Vehicle Distributors, Inc., has been chartered with an authorized capital of \$25,000 to deal in MacDonald steam automobiles and trucks.

MINNEAPOLIS.—B. L. Eckes Co. has opened a store at 41 Ninth street S. to retail automobile radiators, in addition to Bosch radio equipment.

SALT LAKE CITY.—T. T. Harmon has opened a tire and vulcanizing shop at East Fourth South Street near the Chamber of Commerce Bldg. Cupples tires will be featured.

TOLEDO, O.—The State Automobile Accessory Co., has been chartered, with an authorized capital of \$10,000 to manufacture and deal in parts and accessories.

ROCHESTER, N. Y.—William W. MacConnell, formerly connected with L. Motors, Lincoln agency here, has organized the MacConnell Motor Corporation to take over the Ford agency formerly conducted here by the Malcolm Motor Corporation.

DES MOINES, Ia.—E. G. Matthews, for many years identified with automobile activities in this city, has opened his own agency, as an authorized Ford dealer, operating under the name of the Matthews Motor Company.

LOS ANGELES.—O. S. Van Keuren has been appointed used car manager of the Willys-Overland Pacific Company, Los Angeles. He replaces R. E. Starkey who has been advanced to the post of sales manager.

BUFFALO, N. Y.—The Buffalo Oakland Motor Company has appointed Paragon Motor Service, Inc., 2960 Delaware avenue, dealer in the suburb of Kenmore.

SPOKANE, Wash.—William L. Duffy, for 12 years with Riegel Brothers, Dodge Brothers dealers at Spokane, has joined the Eldridge Buick Company as sales manager. Mr. Duffy will be succeeded at Riegel Brothers by Glen Riner, who has been with the concern five years.

SAN FRANCISCO.—Don Hupp, of San Francisco, has been appointed Pacific coast representative for the Perfection Gear Company, according to announcement by S. R. Wolff of that corporation.

WALTHAM, Mass.—An agency for the Chrysler line has been opened here by the Suburban Motors Company that has taken over the business formerly operated by the Hartley Motor Company.

PROVIDENCE, R. I.—The Kelly-Springfield Tire Company has opened a branch here for the Rhode Island trade and has placed Howard E. Limric, for years identified with the Boston branch, in charge.

With the Associations

Big Sales Congress Planned

WASHINGTON, Oct. 17.—Between 500 and 1,000 automobile dealers are expected to convene here October 22, when the Virginia-Maryland-District of Columbia section of the National Sales Congress meets under the auspices and as guest of the Washington Automotive Trade Association. Primary purpose of the Congress is to discuss improvements in sales methods that will not only benefit the public, but advance the interests of the dealers as well.

Invitations to all dealers in passenger cars and trucks in the three states have been sent out, and returns indicate that probably 1,000 dealers will participate. The general session will be held from 2 to 5 o'clock in the afternoon. Preceding the afternoon session there will be a series of group meetings of dealers from outside communities.

Automobile merchandising methods will be discussed by speakers supplied by the National Automobile Dealers' Association. These talks will cover the three phases of management, market analysis, and handling of used cars. Particular stress is laid in the announcement of the meeting by the dealers' association on the advantages it will offer to the automobile buying public. This point is emphasized in a statement accompanying the announcement of the conference.

Would License Shops

ST. LOUIS, Oct. 17.—An ordinance to place a license tax on all automobile repair shops in the city is being planned by the Associated Automobile Service Companies of St. Louis. Such an ordinance, the association hopes, will limit the number of shops and insure better profits and better service.

Less than a dozen of the 500 repair shops in the city are making a fair profit and are adequately equipped to give first class service, according to J. C. Thorpe manager of the association.

A license tax would eliminate so-called alley shops, benefit both the industry and the automobile owner and cause mechanics to retain employment until they had sufficient capital to go into business for themselves on a proper scale, Thorpe says.

Syracuse Elects Directors

SYRACUSE, N. Y., Oct. 17.—Syracuse Automobile Dealers' Association has just elected these directors: S. J. Silverman, Charles G. Hanna, C. W. Bull, B. W. Moyer, Fred J. O'Neil, H. W. Maclellan and W. B. Cherry. The directors will meet soon to elect officers for the year. During the last year Mr. Silverman was president, Mr. Hanna, vice-president, Mr. Bull secretary-treasurer and C. H. Hayes executive manager.

Oppose Gasoline Tax

NEW YORK, Oct. 17.—The Motor Truck Association, the New York State Automobile Association, the Brooklyn Vehicle Association and other organizations in the automotive industry are opposing the movement to impose a tax on gasoline in this state. The legislative committee in charge of such legislation recently held a meeting here, at which Theodore D. Pratt of the truck association said that this state had anticipated the development of the automobile by a \$100,000,000 road construction bond issue. He held that revenue from license plates was more than adequate for repair and maintenance of state roads.

Fort Worth Plans Congress

FORT WORTH, Oct. 17.—The Fort Worth Automotive Trades Association will sponsor an automotive sales congress for all west Texas on November 11, it is announced. The sales congress will be held here and more than 650 dealers, salesmen, maintenance men and accountants are expected to attend. The local association has named Ellis H. Boyd, Clarence Kraft and Ewald Keller to complete the arrangements and send out the invitations. Every automotive man in west Texas will be invited to the congress.

Mortgage Notation Insufficient

RALEIGH, N. C., Oct. 17.—The supreme court of this state held that notation of a mortgage on an automobile sold on deferred payment plan is not sufficient notice of encumbrance. The effect of the decision is to require recording of the mortgage, in all cases, in the county in which the sale was made. Officials of the North Carolina Automotive Trade Association announced that an effort will be made at the next meeting of the general assembly to have the law amended to make notation of the mortgage sufficient notice of encumbrance.

Pilliod Leaves N. S. P. A. Board

DETROIT, Oct. 17.—C. J. Pilliod of the Cleveland Piston Pin & Bolt Co., has resigned as a manufacturing member of the board of directors of the National Standard Parts Association, and his place has been taken by W. M. Albaugh of the Thompson Products, Inc., it is announced by C. B. Fraser, secretary of the association.

Join War Tax Fight

PEORIA, Ill., Oct. 17.—The Illinois Automotive Trade Association is actively participating in the campaign to bring about abolishment of war excise taxes on automotive products. Form letters have been sent to all dealers in Illinois to be sent to their senators and congressmen urging cooperation.

Philadelphia Meetings Begin

PHILADELPHIA, Oct. 17.—The first Fall meeting of the Automotive Service Association was held in the rooms of the Philadelphia Automobile Trade Association with 56 service managers present and the attendance 78 per cent of total membership. Harry Tipper, sales manager, General Motors Export department, A. V. Comings, editor of the Automobile Trade Journal, and James Collins, head of the commercial survey department of the Chilton Class Journal Company, were the speakers.

Tipper broadly outlined the philosophy of the service endeavor and cited the mental attitude developed by the average owner through contact with the service organization. The buyer of automobile service suspects everything he doesn't understand and unless he can justify the bill rendered his attitude will be unfavorable towards that organization.

Collins, speaking on the subject of the "Business Side of Service," gave the maintenance volume picture with figures showing that the money value of new car output for this year would be considerably less than would be spent in the maintenance division of the industry. Service and maintenance are entering the era of profit and since there is no used car factor, greater earnings through maintenance sales will be made with less effort than in selling new vehicles.

"More money for Service Managers," was the theme of Comings' talk. It is difficult to realize a profit on service sales unless the service manager is of a caliber comparable with the best managers in the car sales department. To obtain this type of manager, dealers must raise the standard of remuneration.

Springfield Dealers Elect

SPRINGFIELD, Mass., Oct. 17.—At the annual meeting of the Springfield Automotive Dealers' Association these officers were elected: President, R. M. Sauers, Marmon and Hupmobile; vice-president, H. Raymond Auger; Dodge; treasurer, George E. Adams, Ford; secretary, Harry W. Stacy; directors, George C. Byrnes, Ford; A. G. Medlicott, Packard; A. N. Center, Jordan; H. Raymond Auger, A. V. Reopell, Chevrolet; George E. Adams.

Show Director Named

FORT WORTH, Oct. 17.—J. N. Whitehurst will be general chairman of the annual automobile show of the Fort Worth Automotive Trades Association, to be held in connection with the Fat Stock Show. He was named chairman of the exhibition by President A. G. Fisher. On the general committee with Mr. Whitehurst are Cecil Cooke, Charles Harris, President Fisher and S. F. Webb.

St. Louis Dealers Pleased With Fall Sales Volume

October and November Seen as Big Months by Authorities in Whole Industry

ST. LOUIS, Oct. 17.—Manufacturers, distributors and dealers in St. Louis are all very much pleased with the automobile business these days. Factories are working at capacity production, while distributors and dealers state that they are selling all the cars they can get and could sell more if they had them. It is expected by all members of the automotive industry that this condition will obtain through October and November at least. Also they expect the winter business this year to be as good or better than recent years.

It had been predicted all through the last part of last winter, the spring and the summer that if crop conditions were good in this vicinity the replacement business in rural districts would be good. The crops were good and sales of automobiles, trucks and tractors to the farming communities have been good.

It is believed that Ford cars will go quickly as soon as the Ford dealers are able to deliver. So certain are Ford dealers themselves of this that they are holding down on used car allowances to the minimum and are taking only those which they can reasonably expect to resell.

Higher priced cars also usually go better here during the fall than at any other time of the year. This is because people who buy high priced cars spend their summers away from St. Louis and buy on their return after vacations.

Cars in the middle price class have been going very well and it is expected by those handling them that they will continue to sell in volume.

Paris Automobile Dealers Enter "Slick-Up" Campaign

PARIS, Oct. 3.—(By Mail).—Paris automobile dealers are slicking up. There will be no automobile show in the French capital this year, for the trade delayed getting an option on the handsome Grand Palais and then sulked so long over the other available buildings that it became too late to make a united effort.

Having realized that an annual show helps to boost sales, individual dealers are now preparing their showrooms for a display and a general appeal to the buying public during the month of October. There will be no new models, for engineering departments have taken advantage of the absence of the Salon to hold back their new types.

Practically every showroom on the Avenue des Champs Elysees has been cleaned up inside and outside, special decorations are being added and a publicity campaign is being engineered which is expected to bring the buying public and attract dealers from the provinces.

Coming Motor Events

Automobile Shows

Shreveport, La.	Oct. 24-Nov. 8
Twentieth Annual State Fair showing passenger cars, trucks and tractors.	
Chicago	Nov. 9-14
Seventh annual exhibit of the Automotive Equipment Association at Coliseum, in connection with annual convention.	
New York	Nov. 15-21
Twenty-first Annual Automobile Salon.	
Chicago	Nov. 16-17
Annual convention, National Association of Finance Companies, Hotel Sherman. C. C. Hanch, secretary-manager, 76 W. Monroe St., Chicago.	
Chicago	Nov. 16-18
Convention and exhibition of the National Standard Parts Association, Hotel Sherman, C. B. Fraser, secretary, 310 Hofman Bldg., Detroit.	
Detroit	Nov. 16-21
National Motorbus Show in Grindley Hall, C. E. Stone, chief engineer People's Motor Coach Co., in charge of committee.	
New York	Jan. 9-15
National Automobile Show in Grand Central Palace.	
Newark, N. J.	Jan. 16-23
Nineteenth annual Automobile Show under auspices of New Jersey Automobile Exhibition Co., Chamber of Commerce Building.	
Chicago	Jan. 30-Feb. 6
Twenty-sixth Annual National Automobile Show and Eleventh Annual Automobile Salon.	
Washington	Jan. 30-Feb. 6
Automobile show under auspices of Washington Automotive Trade Association in Washington Auditorium Building, Rudolph Jose, manager.	

San Francisco	Jan. 30-Feb. 6
Tenth annual Pacific Automobile Show under direction of Motor Car Dealers' Association of San Francisco, in Exposition Auditorium, G. A. Wahlgreen, 215-16 Humboldt Bank Bldg., manager.	
Denver	Feb. 2-6
Annual automobile show under auspices of Denver Automobile Dealers' Association, in Municipal Auditorium, Myron L. Smith, chairman of committee.	
Louisville, Ky.	Feb. 15-20
Louisville Automobile Show, Armory, under the auspices of the Louisville Automobile Dealers Association, J. Garland Lea, manager.	

Races

Baltimore	Oct. 24
Charlotte, N. C.	Nov. 11
Los Angeles, Cal.	Nov. 26

Conventions

Des Moines, Ia.	Nov. 12-13
Automotive Merchants' Association Convention.	
St. Louis	Nov. 17-19
Annual Convention of National Tire Dealers' Association.	
New York	Jan. 11-13
Second World Motor Congress, under auspices of National Automobile Chamber of Commerce.	

Foreign Shows

London, England	Oct. 29-Nov. 7
Annual Truck Show.	
Berlin, Germany	Nov. 26-Dec. 6
Annual Automobile Show in the Kaiserdamm.	

Hupp Building More Than 100 of New Sixes Daily

DETROIT, Oct. 17.—Upwards of 100 of the new Hupp six passenger cars are being turned out daily at the factory here, Charles D. Hastings, president and general manager of the Hupp Motor Car Corporation has announced.

Including October 5, Mr. Hastings said that more than 5,000 orders for the new car had been received at the factory from Hupp dealers throughout the country. Deliveries are expected to be made throughout the country within the immediate future. Shipments to dealers have been going on for the past few weeks.

"Output of both the Eight and Six," Mr. Hastings said, "will be the largest in the history of the company. New machinery, rearranging of the buildings and additional productive space will enable us to raise our production for 1926 to new records."

MISSOURI GAS RECEIPTS

ST. LOUIS, Oct. 17.—The state tax of 2 cents per gallon on gasoline used for motor vehicle fuel produced \$3,026,871.31 for the Missouri state road fund in the first eight months of its operation. The tax became effective on January 1 last. It is estimated by the State Oil Inspection Department that approximately \$4,500,000 will be collected for the fund for the whole year.

Several French manufacturers are arranging to throw their works open to visitors during a fortnight in October, and in some cases they are offering to pay country dealers' expenses to Paris.

OREGON SHOW HELD

SALEM, Ore., Oct. 17.—The annual fair at Salem attracted 175,000 from all parts of Western Oregon and a number of automobile dealers from both Salem and Portland who contributed to make the automobile exhibit a success expressed themselves as being well repaid with both a new and large list of prospects and a number of actual sales during the progress of the fair. From a mere section of one building a few years ago the automobile department has grown to an institution which occupies an entire building and several were forced to house their exhibits in tents nearby.

WOODS JOINS MACK

DECATUR, Ill., Oct. 17.—Charles G. Woods, who has been master mechanic for the Decatur street railway lines and associated with that traction service 22 years, has resigned to become affiliated with the Mack International Motor Truck Co., directing its sales in 41 northern Illinois counties. He will make his headquarters in Decatur and retain his interests in the Woods Fare Box Company, makers of street car, bus and other fare box devices, which is rapidly expanding in its field.

Thirty-nine Makes Shown at Coast Closed Car Salon

**Four-day Show Is Visited by About
27,000 Persons, Officials
Estimate**

LOS ANGELES, Oct. 17.—Thirty-nine distributors presented as many different makes of cars to a total attendance estimated at nearly 27,000 at the Second Annual Closed Car Salon which was held recently at the Biltmore Hotel. The show lasted four days and the attendance, the actual sales made at the show, and the stimulus to business immediately following more than satisfied all expectations, according to Burt Roberts, secretary of the Los Angeles Motor Car Dealers' Association, manager of the show.

This year's salon was held in an exceptionally dignified setting. There were no signs or placards, not even in the display booths in front of the cars, and no general circulation of literature was permitted. At night all salesmen in attendance in the various booths were required to wear formal evening dress. An elaborate musical and general entertainment program was provided during the afternoon and evening.

Lynn C. Buxton, Stearns-Knight distributor, as chairman, J. S. Woollacott, assistant general manager of Harold L. Arnold, Inc., Lincoln dealer, and H. E. Woodward, president of the Reo Motor Car Company of Southern California, with Secretary Roberts, comprised the show committee.

LIGHTING MEN TO MEET

CHICAGO, Oct. 17.—The general fall meeting of the Automotive Lighting Association will be held November 5, beginning at 10 A. M. at the Drake Hotel in Chicago.

Victor Rubber President Is Appointed Receiver

SPRINGFIELD, O., Oct. 17.—H. H. Durr, president of the Victor Rubber Co., has been appointed receiver of the company on application of Ernst & Ernst of Cleveland and other creditors, who state that they hold claims totaling \$435,390.02. The action was brought against the Victor company and Trustees H. McGraw of Cleveland, H. J. Robbins of Cincinnati, and Harlen C. West, cashier of the First National Bank of this city.

Mr. Durr was authorized to conduct the mat and mechanical rubber departments of the company as going concerns, the Victor tire business having been sold by the trustees to an eastern concern in July.

He also was empowered to dispose of such parts of the business as he may see fit in the liquidation of the company, also to endeavor to dispose of the property as a going concern, if possible. The company, Mr. Durr says, is insolvent, that the claims cannot be paid and that the stockholders will receive nothing.



SQUEEKS and RATTLES



Homeward Bound

"Ah, we must be on the right road. There is the man we ran over this morning!"

—Le Rire (Paris).

Our idea of a hard job would be to sell buggy whips in Detroit.

—Cougar's Paw.

A great many traffic jams are due to encounters between a chap who points with pride and one who views with alarm.

—The Safety Valve.

One thing you can say about a flivver. It rattles before it strikes.

—Arkansas Gazette

Moe: So that was a hot baby you had in your car?

Joe: I'll say. She was just burnin' up.

Moe: Well, why didn't you put her out?

—Johns Hopkins Black & Blue Jay.

Aviator: Hooray! I've discovered it at last!

Passenger: Discovered what?

Aviator: Perpetual motion. I can't stop this blamed thing.

—Harvard Lampoon.

Irrelevant Evidence

A married couple were knocked down by a motor. The car dashed away. The police arrived and found the couple bursting with indignation, especially the wife.

"Do you know the number of the car?" asked the policeman.

"Yes," replied the husband, "by a strange coincidence the first two numbers formed my age and the second two the age of my wife."

"John," said the wife, we will let the matter drop at once!"

—Dorfsarbier, Berlin.

That man who drove 550 miles in a day probably was looking for a place to park his car.

—Council Bluffs Nonpareil.

Woman in Auto—"Good heavens, son; we've just run over a poor man! Stop! Stop!"

Driver—"Keep still, mother; you'll make every one think this is the first time we were ever out in an auto."

—Le Rire (Paris).

"Bet I can make fifty tonight, in my Ford."

"I could have just as good a time with one."

Colin A. Campbell Takes Marmon Sales Promotion

INDIANAPOLIS, Oct. 15.—Announcement of the appointment of Colin Alfred Campbell of Indianapolis, as sales promotion manager of the Nordyke & Marmon Company, in charge of sales extension activities, has just been made by H. H. Brooks, general director of sales. Mr. Campbell has served for the last year as Marmon district manager in the Southwestern territory of the United States.

Mr. Campbell joined the Marmon organization in July, 1920, upon his graduation from Ohio State University. His first duties largely centered upon territorial analysis and he worked out the system of territorial analysis now used by the company. Later he was placed in a position of administrative responsibility in the factory sales department and, following the announcement of the new Marmon, he was appointed to the position of district sales manager in the South.

During his college career and prior to his connection with the Nordyke & Marmon Company, Mr. Campbell was connected, in engineering capacities with the United States Geological Survey, the Pennsylvania Railroad and the Buckeye Steel Castings Company. During the war, he served in the Air Service and was discharged with the grade of captain. He now is a major in the Air Service Reserve.

MacLEAN QUEBEC MANAGER

MONTREAL, Oct. 17.—The appointment of W. A. MacLean as manager of the Chevrolet Motor Co. of Canada, Ltd., for the province of Quebec is announced. Mr. MacLean joined the Chevrolet organization last spring. Previous to that he was manager of Montreal Motor Sales, Ltd., following an experience of some years as assistant district organizer of the Ford Motor Company of Canada, Ltd.

Kelly-Springfield Motor Truck Co. Ordered Sold

SPRINGFIELD, O., Oct. 17.—Order of sale was granted by Judge F. M. Krapp in the case of the Bankers' Trust Company of New York against the Kelly-Springfield Motor Truck Co., this week in common pleas court. Receiver Pearl A. Lewis was directed to offer the property for sale at 2 p. m., November 23, at the factory.

This step is incident to the sale and reorganization of the company upon a sound basis by eastern men. It is stated that the company has three prospective buyers.

The claims total \$1,500,000 while the plant and equipment is appraised at \$10,800,000. The Kelly company makes heavy duty motor trucks and is said by officials to have very good prospects.

Prices and Weights of Current Passenger Car Models

SHIP. WT. PASS. BODY STYLE. PRICE	SHIP. WT. PASS. BODY STYLE. PRICE	SHIP. WT. PASS. BODY STYLE. PRICE	SHIP. WT. PASS. BODY STYLE. PRICE
AJAX 108 in. W. B.	CHEVROLET	DUESENBERG	HUDSON (Cont'd)
2210 5-p Touring \$865	"Superior" (Series K)	Straight "8"	3425 4-p Brougham 4 d. 1,495
2410 5-p Sedan 995	1780 2-p Roadster \$525	3970 4-p Roadster †	3675 7-p Sedan 1,695
ANDERSON "41"	1875 5-p Touring 525	3700 4-p Phaeton \$6,650	HUPMOBILE "A"
2650 5-p Touring \$1,195	2030 2-p Utility Coupe 675	3920 4-p Phaeton †	2620 5-p Touring \$1,225
2675 4-p Sp. Touring 1,445	2130 5-p Coach 695	3980 4-p Sp. Phaeton †	2800 5-p Sedan 1,285
2925 2-p Coupe 1,425	2215 5-p Sedan 775	4500 4-p Sedan †	"B"
2875 5-p Sedan 1,695	CHRYSLER "Four"	4500 7-p Sedan †	3050 2-p Roadster 1,795
2925 5-p Sp. Sedan 1,895	(109 in. W. B.)	†Manufacturers do not quote list prices.	3270 4-p Roadster 1,895
"50"	2300 5-p Touring \$895	DU PONT	3135 5-p Touring 1,795
2975 7-p Touring 1,595	2405 2-p Club Coupe 995	"D"	3295 2-p Coupe 2,095
3200 7-p Sedan 1,945	2510 5-p Coach 1,045	3300 2-p Roadster \$2,600	3295 4-p Coupe 2,095
APPERSON "6"	2570 5-p Std. Sedan 1,095	3550 5-p Touring 2,600	3410 5-p Sedan 2,195
3100 5-p Phaeton \$1,575	"Six" (112 3/4 in. W. B.)	3800 7-p Touring 2,750	JEWETT "23-25"
3130 5-p Sp. Phaeton 1,650	2805 4-p Roadster \$1,625	3550 5-p Touring Sedan 3,400	3060 4-p DeLuxe Road. \$1,500
3145 4-p Coupe 2,050	2785 5-p Phaeton 1,395	DURANT	3000 5-p DeLuxe Touring 1,320
3570 5-p Sp. Sedan 2,100	2895 5-p Coach 1,445	A-22	2990 5-p Coach 2d. 1,245
3520 5-p Brougham 2,050	2935 4-p Coupe 1,795	2225 2-p Sp. Roadster \$900	3160 5-p DeL. Coach 2d. 1,400
"ST8"	2995 5-p Brougham 1,865	2225 5-p Touring 810	3325 5-p DeLuxe Sedan 1,680
3520 5-p Sp. Phaeton 1,995	3060 5-p Sedan 1,695	2395 5-p Spec. Touring 930	JORDAN
3750 4-p Coupe 2,450	3085 5-p Imperial Sedan 1,995	2395 4-p Coupe 1,090	..... 4-p Playboy Road. \$1,695
3770 5-p Brougham 2,450	3090 5-p Crown Sedan 2,095	2505 4-p Spec. Coupe 1,160	..... 5-p Sedan 1,845
3790 5-p Sedan 2,595	(118 3/4 in. W. B.)	2505 5-p Sedan 1,150	Series "A"
AUBURN	3225 5-p Town Car 3,725	2505 5-p Spec. Sedan 1,280	3330 2-p Playboy Road. \$2,275
..... 4-p Sport-Roadster 1,495	CLEVELAND "31"	ELCAR	3340 5-p Touring 2,275
..... 6-p Touring 1,395	2345 5-p Touring \$895	2560 5-p Touring \$1,095	3450 3-p Friendly "9" 2,575
2900 5-p Brougham 1,595	2435 5-p Touring DeLuxe 1,025	2900 5-p Coach 1,195	3625 5-p Brougham 2,575
2885 5-p Sedan 1,795	2470 3-p Coupe 975	2779 5-p Sedan 1,395	3520 4-p Victoria 2,475
..... 7-p Sedan 1,995	2600 5-p Sedan 995	"6-65"	3525 5-p Sedan 2,675
"8-88"	"43"	..... 5-p Touring 1,295	3470 7-p Sedan 2,925
..... 3-p Sport Roadster 1,975	2750 5-p Touring 1,095	2779 5-p Coach 1,395	KISSEL "55"
..... 6-p Touring 1,995	3000 5-p Coach 1,295	2900 5-p Sedan 1,595	3130 2-p Speedster \$1,795
..... 5-p Brougham 2,250	2950 3-p Coupe 1,175	"8-80"	..... 2-p Sp'dster DeLuxe 2,085
..... 5-p Sedan 2,350	3050 5-p Sedan 1,295	3700 5-p Sp. Touring 2,165	..... 4-p Speedster 1,895
..... 7-p Sedan 2,550	3190 5-p Sedan DeLuxe 1,595	..... 7-p Touring 2,265	..... 4-p Sp'dster DeLuxe 2,185
..... 7-p Sedan 2,400	3190 5-p Sport Sedan 1,625	3000 3-p Coupe Roadster 2,315	3330 2-p Enc. Speedster 2,085
BUICK "Standard"	COLE "MASTER"	..... 5-p Sedan 2,265	..... 4-p Enc. Speedster 2,185
..... 2-p Roadster \$1,125	3675 4-p Volante Touring \$2,325	4050 7-p Sedan 2,765	..... 4-p Enc. Sp'dr DeL. 2,685
..... 5-p Touring 1,150	3795 7-p West. Touring 2,325	4000 5-p Brougham 2,865	..... 2-p Enc. Sp'dr DeL. 2,585
..... 2-p Coupe 1,195	3675 4-p Aero-Vol. Tour. 2,475	ESSEX	3190 4-p Tourster 1,795
..... 4-p Coupe 1,275	4055 5-p Brouette Sedan 3,225	2185 5-p Touring \$850	..... 4-p Tourster DeL. 1,985
..... 5-p 4d. Sedan 1,295	4000 7-p Royal Sedan 3,225	2370 5-p Coach 795	2980 5-p Phaeton 1,585
..... 5-p 2d. Sedan 1,195	4100 7-p Royal Limousine 3,325	FLINT	3170 5-p Phaeton DeL. 1,785
"Master"	CUNNINGHAM	3325 4-p Sport Roadster \$1,950	..... 7-p Touring 1,685
(120 in. W. B.)	4600 7-p Touring \$7,000	3245 5-p Touring 1,595	..... 7-p Touring De L. 1,885
..... 2-p Roadster 1,250	4500 4-p Sp. Touring 6,500	3310 4-p Sp. Touring 2,050	3430 4-p Coupe 2,085
..... 5-p Touring 1,295	4700 4-p Coupe 8,000	3245 4-p Coupe 2,195	..... 4-p Coupe De Luxe 2,485
..... 5-p Sedan 1,495	5000 6-p Limousine 8,500	3595 5-p Sedan 2,285	3540 5-p Brougham Sedan 1,995
..... 5-p 2d. Sedan 1,395	DAGMAR	3565 5-p Brougham 4d. 2,485	..... 5-p Broug. Sed. DeL. 2,485
(128 in. W. B.)	3750 4-p Roadster \$3,500	"40"	..... 5-p Brougham 2 d. 1,695
..... 3-p Sp. Roadster 1,495	3800 4-p Sp. Tourer 3,500	2715 5-p Touring 1,185	4070 7-p Sedan De Luxe 3,085
..... 5-p Sp. Touring 1,525	3700 4-p Phaeton 3,500	2940 5-p Sedan 4 d. 1,495	4010 7-p Berline Sed. DeL. 3,185
..... 4-p Country Club 1,765	4200 4-p Petite Coupe 4,500	2965 5-p Brougham 1,575	3530 5-p Victoria 2,185
..... 4-p Coupe 1,795	4200 4-p Petite Sedan 4,500	FORD	..... 5-p Victoria DeLuxe 2,485
..... 5-p Brougham Sedan 1,925	4500 4-p De Luxe Coupe 4,750	Without Starter and Dem. Rims	"75"
..... 7-p Sedan 1,995	4700 5-p Sedan 4,700	1369 2-p Runabout \$260	..... 2-p Speedster 2,195
CADILLAC	4800 7-p Sedan 4,750	With Balloon Tires 335	..... 2-p Speedster De L. 2,485
"V-63" Standard Line	"6-60"	1494 5-p Touring 290	..... 4-p Speedster 2,295
(132 in. W. B.)	3100 4-p Roadster 1,985	With Balloon Tires 335	..... 4-p Speedster DeL. 2,585
4075 2-p Coupe \$3,045	3200 4-p Sp. Touring 1,985	With Starter and Dem. Rims	..... 2-p Enc. Speedster 2,485
..... 5-p Sedan 3,195	3150 5-p Touring 1,785	1521 2-p Runabout 345	..... 2-p Enc. Sp'd'r DeL. 2,985
4155 7-p Sedan 3,295	3500 5-p Sedan 2,445	With Balloon Tires 370	..... 4-p Tourster 2,195
4240 5-p Brougham 2,995	DAVIS	1644 5-p Touring 375	..... 4-p Enc. Speedster 2,585
4360 7-p Imperial 3,435	2650 4-p M. o'War Road. \$1,495	With Balloon Tires 400	..... 4-p Enc. Sp'd'r DeL. 3,085
..... 4-p Victoria 3,095	2915 4-p Legionaire Tour. 1,495	1749 2-p Coupe 520	..... 4-p Tourster DeL. 2,385
Custom Built	2750 5-p Phaeton 1,395	With Balloon Tires 545	..... 5-p Phaeton 1,985
(132 in.)	..... 5-p Sedan 1,595	1882 5-p Sedan, Tudor 580	..... 5-p Phaeton De Luxe 2,185
..... Roadster 3,250	3070 5-p Imperial Sedan 1,795	With Balloon Tires 605	..... 7-p Touring 2,085
(138 in. W. B.)	3065 5-p Berline Sedan 1,795	Sedan, Fordor 660	..... 7-p Touring De Luxe 2,285
4300 7-p Touring 3,250	"91"	With Balloon Tires 685	..... 4-p Coupe 2,485
3960 5-p Phaeton 3,250	2835 4-p Roadster 1,795	FRANKLIN	..... 4-p Coupe De Duxe 2,885
..... 5-p Coupe 4,000	3020 5-p Phaeton 1,695	2800 3-p Sport Roadster \$2,750	..... 5-p Brougham Sedan 2,395
4190 5-p Sedan 4,150	..... 5-p Sedan 1,895	2845 5-p Touring 2,635	..... 5-p Broug. Sed. DeL. 2,985
4250 7-p Suburban 4,285	3245 5-p Imperial Sedan 2,095	2965 3-p Coupe 2,700	..... 5-p Brougham 2 d. 2,095
4355 7-p Imperial 4,485	3215 5-p Berline Sedan 2,095	3175 5-p Sedan 3,090	..... 7-p Sedan De Luxe 3,485
CASE	DIANA "St. 8"	3080 5-p Sport Sedan 3,225	..... 7-p Berl. Sed. De L. 3,585
J. I. C.	2970 5-p Roadster \$1,895	3275 7-p Limousine 3,275	..... 7-p Victoria 2,585
3260 3-p Roadster \$1,840	2990 5-p Phaeton 1,895	4135 5-p Cabriolet 4,400	..... 7-p Victoria De Luxe 2,885
3290 5-p Touring 1,885	3245 5-p Std. Sedan 2d. 1,995	..... 5-p Oxford Sedan 3,172	LEXINGTON
3470 5-p Sp. Touring 2,160	3245 5-p DeLuxe Sedan 2,195	GARDNER	"Concord"
3570 4-p Sub. Coupe 2,480	3130 5-p Cabriolet 2,095	5-p Brougham \$1,495	2950 5-p Touring (Enc.) \$1,595
3640 5-p Sedan 2,590	3140 5-p Sedan de Luxe 2,095	3070 5-p Touring 1,395	3000 5-p Touring 1,695
3650 5-p Brougham 2,590	DODGE BROTHERS	..... 4-p Sport Roadster 1,595	2950 5-p Spec. Touring 1,795
"X"	2473 2-p Roadster \$855	3210 4-p Cabriolet 1,845	3200 5-p Sedan 2,185
3020 3-p Roadster 1,570	2593 2-p Special Roadster 955	3280 5-p Sta. Sedan 1,595	3425 5-p Spec. Sedan 2,445
3050 5-p Touring 1,595	2567 5-p Touring 875	3300 5-p DeLuxe Sedan 1,895	"Minute Man"
3380 5-p Sub. Coupe 2,290	2695 5-p Spec. Touring 975	..... 5-p Brougham 1,995	3120 2-p Roadster 2,145
3380 5-p Victoria 2,290	2708 2-p Coupe "B" 960	3350 5-p Touring 1,995	3195 5-p Touring 2,095
3400 5-p Sedan 2,385	2823 2-p Spec. Coupe "B" 1,060	3360 4-p Sport Roadster 1,995	3459 7-p Touring 2,195
"Y"	2995 5-p "B" Sedan 1,045	3480 4-p Cabriolet 2,245	3230 5-p Lark Touring 2,345
3950 7-p Touring 2,225	3077 5-p Spec. "B" Sedan 1,145	3620 5-p Sta. Sedan 1,995	3368 5-p Cal. Touring 2,495
4320 7-p Sedan 2,975	3020 5-p Sedan A 1,195	3620 5-p Sport Sedan 2,295	3395 7-p Cal. Touring 2,495
CHANDLER "35"	3107 5-p Spec. "A" Sedan 1,280	3620 5-p DeLuxe Sedan 2,495	3375 7-p Royal Coach 2,495
3090 2-p Roadster \$1,695	2723 5-p Coach 1,035	GRAY	3440 5-p Brougham 2,595
3085 5-p Sport Touring 1,495	2823 5-p Spec. Coach 1,135	1750 5-p Touring \$595	3542 5-p Sedan 2,895
3223 7-p Touring 1,595	DORRIS	1880 3-p Coupe 825	LINCOLN
3309 5-p Brougham 1,695	4120 4-p Pasadena Tour. *	2020 5-p Sedan 845	4380 2-p Roadster \$4,000
3525 5-p Met. Sedan 1,795	4193 4-p Coupe *	2130 5-p Royal Sedan 975	4595 7-p Touring 4,000
3498 5-p 20th Cent'y Sed. 1,490	4200 5-p Sedan *	HERTZ	4565 4-p Phaeton 4,000
3594 7-p Sedan 1,895	4310 7-p Sedan *	D-1	..... Sport Touring 4,500
		3360 5-p Sedan \$1,695	4655 4-p Coupe 4,600
		HUDSON "Super Six"	4775 4-p Sedan 4,800
		3425 7-p Phaeton \$1,250	4825 5-p Sedan 4,900
		3450 5-p Coach 1,195	4865 7-p Sedan 5,100
			4945 7-p Limousine 5,300

*Manufacturers do not quote list prices.

Prices and Weights of Current Passenger Car Models

SHIP. WT. PASS. BODY STYLE. PRICE	SHIP. WT. PASS. BODY STYLE. PRICE	SHIP. WT. PASS. BODY STYLE. PRICE	SHIP. WT. PASS. BODY STYLE. PRICE
LOCOMOBILE "48"			
5280 4-p Sportif Tour \$7,460			
5330 7-p Touring 7,460			
5630 5-p Victoria Sedan 10,050			
5464 7-p Brougham 10,040			
5640 7-p Touring Lim. 9,500			
5668 7-p Enc. Drive Lim. 10,050			
5600 7-p Cabriolet 10,300			
"Jr.-8"			
3100 2-p Roadster 2,150			
3000 5-p Touring 1,785			
3400 5-p Sedan 2,285			
3350 5-p Brougham 2,285			
McFARLAN "6"			
"SV"			
3700 2-p Roadster \$2,650			
..... 2-p Spec. Roadster 2,900			
3600 5-p Touring 2,650			
..... 7-p Touring 2,750			
3850 4-p Coupe 3,180			
3850 5-p Sedan 3,180			
..... 5-p Spec. Sedan 3,180			
3850 7-p Sedan 3,280			
..... 5-p Sub. Sedan 3,380			
..... 7-p Sub. Sedan 3,480			
..... 5-p Brougham 4 d. 3,180			
"TV"			
4000 2-p Roadster 5,400			
4600 4-p Sp. Touring 5,600			
4900 4-p Coupe 6,720			
5200 4-p Tour. Sedan 6,720			
5200 7-p Tour. Sedan 6,810			
..... 6-p Sedan 6,720			
..... 7-p Sedan 6,810			
..... 7-p Spec. Sedan 6,810			
..... 7-p Enc. Sedan 7,110			
..... 7-p Sub. Sedan 7,110			
5200 7-p Town Car 9,000			
MARMON "74"			
3695 2-p Roadster \$3,295			
3604 5-p Phaeton 3,295			
3704 7-p Touring 3,295			
3799 5-p Brougham Coupe 3,295			
..... 4-p Victoria Coupe 3,295			
..... 2-p Std. Coupe 3,295			
3869 5-p Sedan 3,295			
3859 5-p Sedan De Luxe 3,775			
3999 7-p Sedan 3,370			
3974 7-p Sedan De Luxe 3,850			
3969 5-p Sedan Limousine 3,900			
3999 7-p Sedan Limousine 3,975			
MERCER "6"			
3860 3-p Runabout \$4,500			
3950 6-p Touring 4,500			
3900 4-p Sporting 4,500			
4070 4-p Coupe 6,250			
4240 5-p Sport Sedan 6,250			
4350 4-p Tour. Limousine 6,500			
4300 4-p Brougham 6,500			
MOON Series "A"			
2490 5-p Roadster \$1,395			
2675 3-p Cab. Roadster 1,595			
2510 5-p Touring 1,195			
2750 5-p Coach 1,395			
2750 5-p DeL.Sedan 2 d 1,495			
2850 5-p Std. Sedan 4 d. 1,545			
2850 5-p DeLuxe Sedan 4d 1,695			
London			
3270 5-p Sp. Touring 1,985			
..... 7-p Touring 1,985			
3590 5-p Petite Sedan 2,540			
NASH "Special"			
2870 2-p Roadster \$1,135			
2980 5-p Touring 1,135			
3120 5-p Sedan 2d 1,265			
3300 5-p Sedan 4d 1,545			
"Advanced"			
(121 in. W. B.)			
3320 3-p Roadster 1,375			
3400 5-p Touring 1,375			
3550 5-p Sedan 2 d 1,485			
"Advanced"			
(127 in. W. B.)			
3480 7-p Touring 1,525			
3640 4-p Victoria 2,090			
3750 5-p Coupe 4 d. 2,190			
3830 7-p Sedan 2,290			
OVERLAND "91" 4—			
2500 2-p Roadster \$975			
2500 5-p Touring 1,025			
2640 5-p Coach 1,095			
2615 3-p Landau Coupe 1,125			
2765 5-p Sedan 1,195			
2885 5-p Landau Sedan 1,295			
OLDSMOBILE "30"			
2235 5-p Touring \$875			
2445 5-p Sp. Touring 980			
2460 5-p Coach 950			
2660 5-p De Luxe Coach 1,040			
2535 5-p Sedan 1,025			
2735 5-p De Luxe Sedan 1,115			
SHIP. WT. PASS. BODY STYLE. PRICE			
OVERLAND "91" 4			
(100 in. W. B.)			
1919 5-p Touring \$495			
..... 2-p Coupe 625			
2205 5-p Sedan De Luxe 695			
2202 5-p Std. Sedan 2 d. 595			
"93" 6			
(112¾ in. W. B.)			
2443 5-p Sta. Sedan 895			
2584 5-p Sedan De Luxe 1,095			
PACKARD "6"			
(126 in. W. B.)			
3643 4-p Roadster \$2,785			
3653 5-p Touring 2,585			
3595 4-p Sp. Touring 2,750			
3753 4-p Coupe 2,585			
3937 5-p Sedan 2,585			
(133 in. W. B.)			
3793 7-p Touring 2,785			
4043 7-p Sedan 2,785			
..... 5-p Club Sedan 2,725			
4143 7-p Sedan Limousine 2,885			
"8"			
(136 in. W. B.)			
4060 4-p Runabout 3,950			
4090 5-p Touring 3,750			
4023 4-p Sp. Touring 3,900			
4242 4-p Coupe 4,650			
4528 5-p Sedan 4,750			
..... 2-p Coupe 5,775			
(143 in. W. B.)			
4199 7-p Touring 3,950			
..... 5-p Club Sedan 4,890			
4655 7-p Sedan 5,000			
4710 7-p Sedan Limousine 5,100			
PAIGE "21-24"			
3875 4-p Phaeton \$2,165			
3935 7-p Phaeton 2,165			
4325 5-p Sedan De Luxe 2,395			
4325 7-p Sedan De Luxe 2,840			
PEERLESS "6-72"			
(126 in. W. B.)			
3175 5-p Touring \$1,895			
3425 5-p Coupe 2,295			
3500 5-p Sedan 2,395			
(133 in. W. B.)			
3275 2-p Roadster 2,195			
3300 7-p Touring 1,995			
3700 7-p Sedan 2,595			
3825 7-p Limousine 2,695			
"8-67"			
3950 4-p Phaeton 2,845			
3995 7-p Phaeton 2,895			
4300 5-p Town Brougham 3,495			
4310 5-p Town Sedan 3,495			
4400 7-p Sub. Sedan 3,595			
4525 7-p Berline Lim. 3,795			
4100 4-p Victoria Coupe 3,245			
4150 5-p Sub. Coupe 3,295			
PIERCE-ARROW "33"			
4350 2-p Runabout \$5,250			
4500 4-p Touring 5,250			
4590 7-p Touring 5,250			
4730 3-p Coupe 6,800			
4800 4-p Sedan 6,900			
4960 7-p Sedan 7,000			
4750 4-p Coupe Sedan 6,900			
4730 6-p Brougham 6,800			
4850 7-p Limousine 7,000			
5060 7-p Enclosed Lim. 7,000			
4780 7-p French Lim. 7,000			
4730 6-p Landaulet 7,000			
"80"			
3205 2-p Roadster 2,895			
3260 4-p Phaeton 3,095			
3385 7-p Phaeton 2,895			
3430 5-p Coach 3,150			
3365 4-p Coupe Landau 3,820			
3335 4-p Coupe 3,695			
3440 5-p Sedan 3,895			
3560 7-p Sedan 3,995			
3615 7-p Enc. Drive Lim. 4,045			
REO "T-6"			
3350 2-p Roadster \$1,665			
3182 5-p Sp. Touring 1,595			
3350 2-p Coupe 1,495			
3400 5-p Sedan 4 d. 1,565			
3545 5-p Spec. Sedan 1,745			
REVERE "25"			
3900 2-p Sp. Roadster \$2,750			
3975 4-p Speedster 2,750			
4050 5-p Touring 2,750			
4300 5-p Sedan 3,800			
"M"			
3700 2-p Roadster 3,200			
3800 4-p Sportster 3,200			
3970 5-p Touring 3,200			
4400 5-p Sedan 4,000			
SHIP. WT. PASS. BODY STYLE. PRICE			
RICKENBACKER			
"Six" (117 in. W. B.)			
..... 3-p Roadster \$1,595			
..... 5-p Phaeton 1,495			
..... 3-p Coupe Roadster 1,695			
..... 3-p De Luxe 1,820			
..... 4-p Coupe De Luxe 1,995			
..... 5-p Spec. Sedan 1,795			
..... 5-p De Luxe 1,920			
..... 7-p Sedan De Luxe 2,070			
..... 5-p Coach Brougham 1,595			
..... 5-p De Luxe 1,720			
"Eight" (121½ in. W. B.)			
..... 3-p Roadster 1,995			
..... 5-p Phaeton 1,995			
..... 3-p Coupe Roadster 2,095			
..... 3-p De Luxe 2,220			
..... 5-p Spec. Sedan 2,195			
..... 5-p De Luxe 2,320			
..... 7-p Sedan De Luxe 2,470			
..... 5-p Coach Brougham 1,995			
..... 5-p De Luxe 2,120			
ROAMER			
"6-50-55" (115 in. W. B.)			
..... 2-p Roadster \$1,385			
..... 5-p Spec. Tourer 1,245			
..... 2-p Bus. Coupe 1,295			
..... 5-p Coupe 1,395			
..... 5-p Sedan DeLuxe 1,595			
"6-54-E" (118-133 in. W. B.)			
..... 4-p Roadster 2,385			
..... 4-p Tourer 1,985			
..... 4-p Sport 2,285			
..... 7-p Tourer 2,285			
..... 3-p Cabriolet 2,750			
"4-75-E" (123 in. W. B.)			
"Custom Built"			
..... 2-p Speedster 3,485			
..... 3-p Sport 3,285			
..... 4-p Tourer 2,985			
"8-88" (133 in. W. B.)			
..... 4-p Roadster 2,750			
..... 5-p Sport 2,750			
..... 5-p Tourer 2,395			
..... 7-p Tourer 2,585			
..... 2-p Speedster 2,985			
..... 3-p Cabriolet 2,950			
..... 5-p Spec. Sedan 3,285			
..... 7-p Sedan (136 in. W. B.) 3,185			
..... 5-p Brougham 2,785			
ROLLIN "G-2"			
2360 5-p Touring \$1,155			
2405 3-p Coupe Roadster 1,325			
2595 5-p Brougham 1,325			
2575 5-p Sedan 1,455			
ROLLS-ROYCE			
Chassis ††			
††Manufacturers do not quote list prices.			
STANLEY "252"			
3400 5-p Phaeton \$2,500			
3800 5-p Sedan 3,300			
STAR			
..... 2-p Roadster \$525			
..... 5-p Touring 525			
..... 2-p Coupster 595			
..... 2-p Coupe 675			
..... 5-p Coach 695			
..... 5-p Sedan 4 d. 775			
STEARNS-KNIGHT			
"B" (4)			
..... 4-p Coupe Roadster \$1,795			
..... 5-p Touring 1,595			
..... 5-p Sedan 2,095			
..... 4-p Coupe Brougham 1,895			
..... 5-p Brougham 2,095			
"S" (6)			
..... 2-p Roadster 2,495			
..... 5-p Touring 2,395			
..... 7-p Touring 2,495			
..... 2-p Coupe 3,395			
..... 4-p Sp. Coupe 3,150			
..... 5-p Sedan 2,945			
..... 5-p Sp. Brougham 3,395			
..... 4-p Sp. Sedan 3,395			
"C" (6)			
3525 4-p Touring 1,875			
3540 5-p Touring 1,875			
3550 2-p Sport Coupe 2,185			
3650 5-p Coupe Brougham 2,285			
3700 5-p Sedan 2,475			
3700 5-p Brougham 2,475			
..... 5-p Brough. Sedan 2,480			
STEVENS-DURYEA			
4200 2-p Roadster \$8,150			
4400 7-p Touring 7,500			
4250 4-p Sp. Touring 7,750			
4600 4-p Coupe 9,000			
4600 4-p Sedan 10,000			
4800 6-p Sedan 9,675			
4800 6-p Town Brough. 10,175			
4800 6-p Vestibule Limou. 9,675			
SHIP. WT. PASS. BODY STYLE. PRICE			
STEVENS-DURYEA (Cont'd)			
4800 7-p Vestibule Lim. 10,175			
4800 7-p ¾ Limousine 10,175			
4800 7-p Cabriolet 10,175			
STUDEBAKER			
Standard Six			
2760 3-p Du. Roadster \$1,125			
2820 3-p Sport Roadster 1,235			
2870 5-p Du. Phaeton 1,145			
2950 5-p Sport Phaeton 1,255			
2945 3-p Country Club 1,295			
2980 5-p Coach 1,195			
3260 5-p Sedan 1,495			
3280 5-p Berline 1,650			
Special Six			
3360 3-p Du. Roadster 1,395			
3480 4-p Sp. Roadster 1,595			
3475 5-p Du. Phaeton 1,445			
3875 4-p Victoria 1,750			
3785 5-p Brougham 1,695			
3545 5-p Coach 1,445			
3885 5-p Sedan 1,895			
3890 5-p Berline 2,120			
Big Six			
..... 7-p Du. Phaeton 1,795			
..... 5-p Coupe 2,045			
..... 5-p Brougham 4 d. 2,195			
..... 7-p Sedan 2,245			
3890 5-p Berline 2,120			
STUTZ			
"6-94"			
3492 2-p Roadster \$2,395			
3640 5-p Touring 2,395			
3940 4-p Coupe 3,050			
3926 5-p Sedan 3,050			
"6-95"			
4064 5-p Sportster 3,035			
4152 7-p Tourster 3,070			
4305 5-p Sportbrohm. 3,785			
4622 7-p Suburban 3,935			
4675 7-p Berline 4,035			
VELIE			
"60"			
3030 4-p Sp. Roadster \$1,650			

Mechanical Specifications of Current Passenger Car Models

ifications of cars distributed on a national basis

MAKE AND MODEL										ENGINE										ELECTRICAL SYSTEM										REAR AXLE										BRAKES										Chassis Lubrication										ABBREVIATIONS— NAMES OF MFRS. OF STOCK PARTS									
Wheel Base (Inches)	Tire Size Decimals-Balloons	Make and Model	Bore and Stroke	Rated H.P. N.A.C.C.	Valve Dis- placement	Camshaft Drive	Crankcase In- ter. or Sep.	Piston Material	No. Main Bear.	Oil Cleaner?	Cooling System	Thermosstat?	Carburetor	Air Cleaner?	Ignition System	Generator and Starter Make	Clutch—Type and Make	Gear Set—Make	Universals—Type and Make	Type and Make	Gear Ratio	Foot—Type and Location	4-Wheel Type	Steering Gear—Make	Rear Springs—Type	Length	Type and Make																																										
108	30x4.75	Own.....	6-3x4 1/4	21.6	170	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	A-L.....	P.B.&B.	Own.....	f-The.....	1/2 Own.....	4.77	1/2 Own.....	E-T	M	Ros.....	S-50 1/2	Pr-Al.....	A-K—Atwater-Kent																																										
120	32x6.00	Own.....	6-3x4 1/4	24.4	204	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	5.10	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I.	Ch.....	3	N	Pu.....	N	Car.....	N	Remy.....	P.Roc.....	Own.....	m-Sie.....	1/2 Col.....	4.90	1/2 Col.....	E-T	M	Ros.....	1-48	Pr-Ze.....	A-L—Auto-Lite																																										
130	32x6.25	Own.....	6-3x4 1/4	31.3	270	He.....	Int. C.I																																																														

Lockheed Braking Far More Certain



Especially on Slippery Pavements

Observe the greater confidence of the man or woman driving a car equipped with Lockheed Hydraulic Four-Wheel Brakes.

That serene certainty is especially outstanding when the streets are slippery with rain, snow or ice.

The reasons for Lockheed safety are inherent in the brakes. When you press a Lockheed Hydraulic brake pedal, the power *must* be transmitted *equally* to each of the four brakes, all the time, because of the hydraulic principle.

That's why Lockheeds, and Lockheeds alone, assure *minimum* skidding and *maximum* safety.

Lockheed Hydraulics consist

merely of a master cylinder and four tubes protected by the chassis frame, which lead to the operating brake-cylinders at the four wheels.

Because of their construction Lockheed Hydraulics work as efficiently, as lightly, as certainly, and with the same absence of rattle, when the car is old, as when it is new.

Lockheed Hydraulics are factory equipment on the better-value cars in every price field, from well under \$1000 to the most expensive.

Their elimination of costly service, together with the satisfaction they afford the car owner, gives a substantial advantage to the dealer handling Lockheed equipped cars.

Nation-wide special service on Lockheed Hydraulic Four-Wheel Brakes is at your command in strategically located cities through the Wagner Electric Corporation. Each of these service centers carries a complete stock of Lockheed parts and is equipped with men and machinery that assure expert service.

HYDRAULIC BRAKE COMPANY, DETROIT, MICHIGAN

The Answer
LOCKHEED
Four Wheel Brakes
HYDRAULIC

(This list comprises cars distributed on a national basis)

[illegible]

Quick repairs by
the oxy-acetylene
process are made
possible by easily
portable cylinders
of

Prest-O-Lite

DISSOLVED ACETYLENE

THE PREST-O-LITE COMPANY, INC.

Oxy-Acetylene Division

General Offices: Carbide and Carbon Bldg., 30 East 42d St., New York

In Canada: Prest-O-Lite Co. of Canada, Limited, Toronto

31 Plants — 71 Warehouses — 22 District Sales Offices





A New
General Motors Automobile

To the Automobile Dealers of America

THROUGH the Oakland Division, General Motors will shortly announce an entirely new automobile.

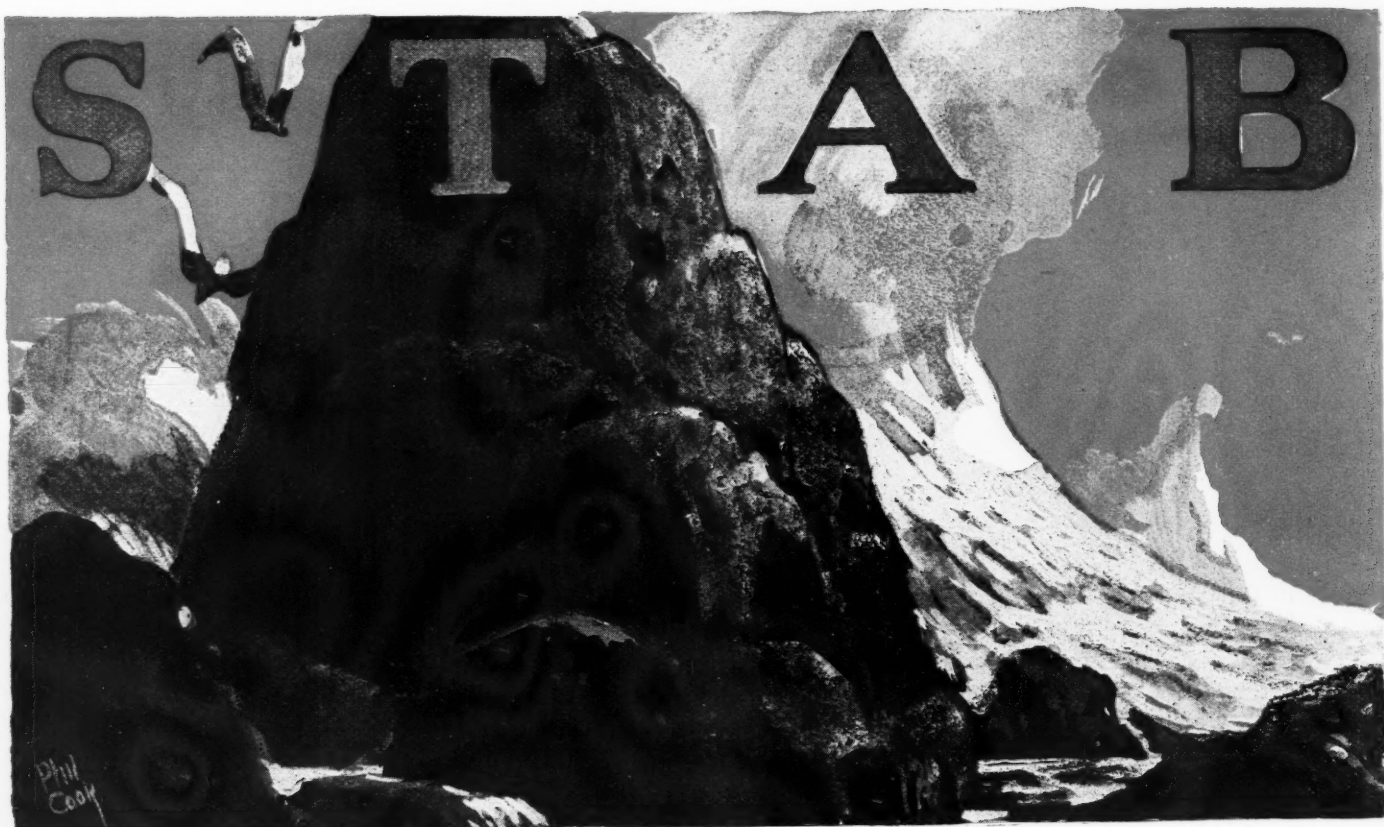
This newest member of a famous family will be the fruit of the resources, engineering skill and manufacturing experience gained by General Motors in more than seventeen years of leadership.

It will combine elements of appearance, performance, and engineering design which will win for it immediate public acceptance.

It will be built by Oakland and distributed in conjunction with the present Oakland Six.

This double franchise promises to become one of the most profitable in the industry.

Every automobile dealer in America—regardless of size, location or present affiliation—is invited to write at once for complete details. Address Oakland Motor Car Company, Pontiac, Mich.



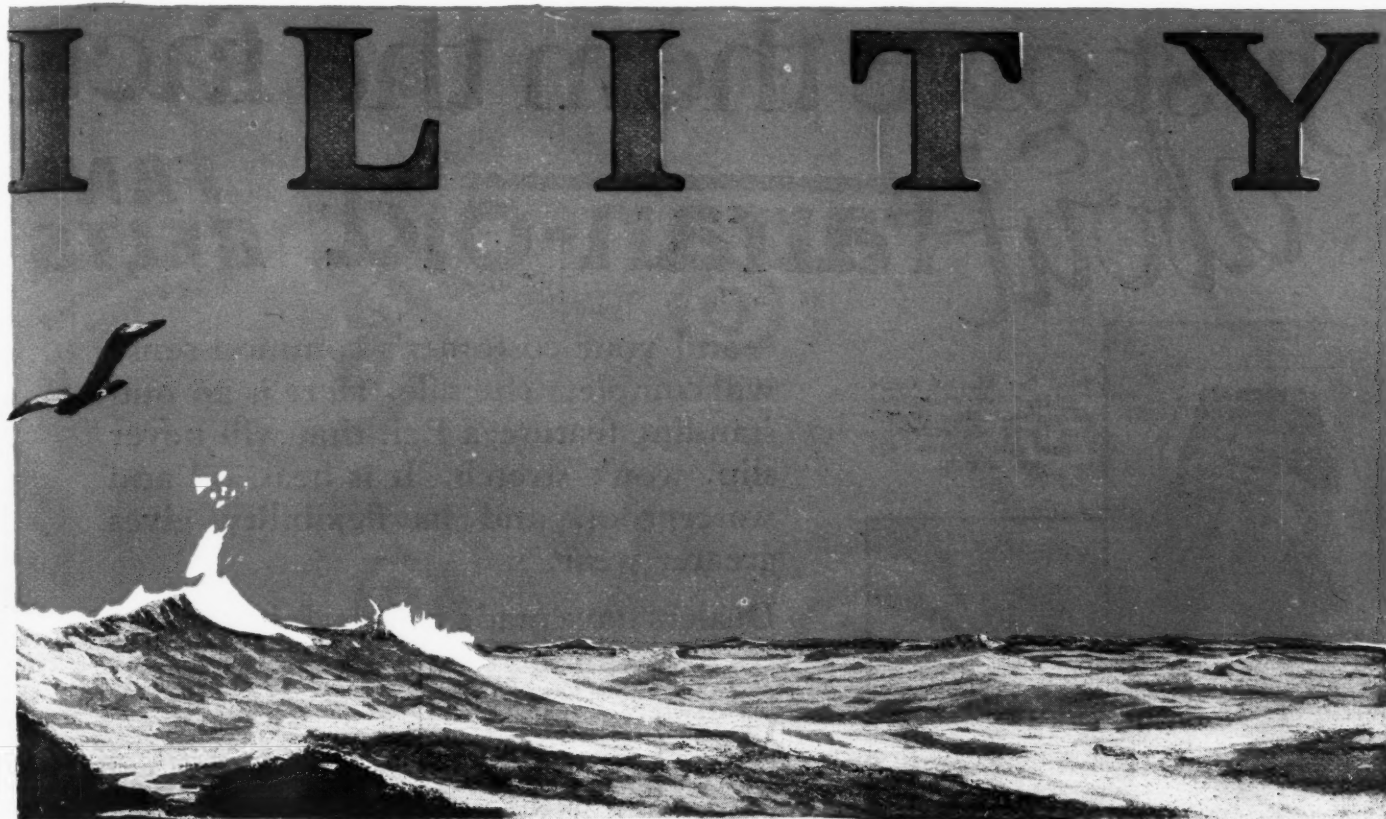
A STABLE manufacturing organization—a stable sales policy—a stable product, manufactured to sell on a basis of genuine service—a stable franchise, full of profit possibilities. Ask us for the details.

MULTIBESTOS COMPANY
WALPOLE, MASS., U. S. A.

Branches: NEW YORK CHICAGO DETROIT NASHVILLE

MULTI
BRAKE

REG. U. S.



THE MULTIBESTOS LINE

Multibestos TAXITRUX Brake Lining

Multibestos 229 Transmission Lining for Ford Cars

Multibestos SPECIAL Transmission Lining for Ford Cars

Multibestos NO-WIRE Transmission Lining for Ford Cars

Multibestos FIBRE Transmission Lining for Ford Trucks

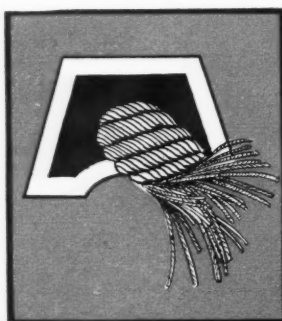
Multibestos Lined Brake Shoes for Ford Cars

Multibestos Clutch Linings

and

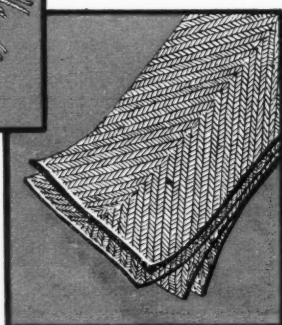
BESTOS
PAT. OFF.
LINING

Just give them the facts About **Farran-oid** **FAN BELTS**



Dual-flex Molded Cable "V" type Belt—built about an endless, twisted, stretch-proof core, not cords but a twisted cable. It won't slip—it won't stretch.

Herringbone Flat Endless Belt—four plies of specially woven Herringbone tape, impregnated with Farran-oid compound. It won't slip—it won't stretch.



—and your customer's common sense will complete the sale. Here is an outstanding feature, a Belt that will never slip, won't stretch. It is heat, oil and waterproof, and its flexibility gives greater wear.

Dealers have made wonderful successes with Farran-oid Fan Belts—gained new friends and added to the prestige of their house. Stock them and push them—we will help you with advertising suggestions and proved merchandising plans. The quality is there—the profit is worth the effort.

Round out your Fan Belt advantages by Stocking the Whole Farran-oid Line

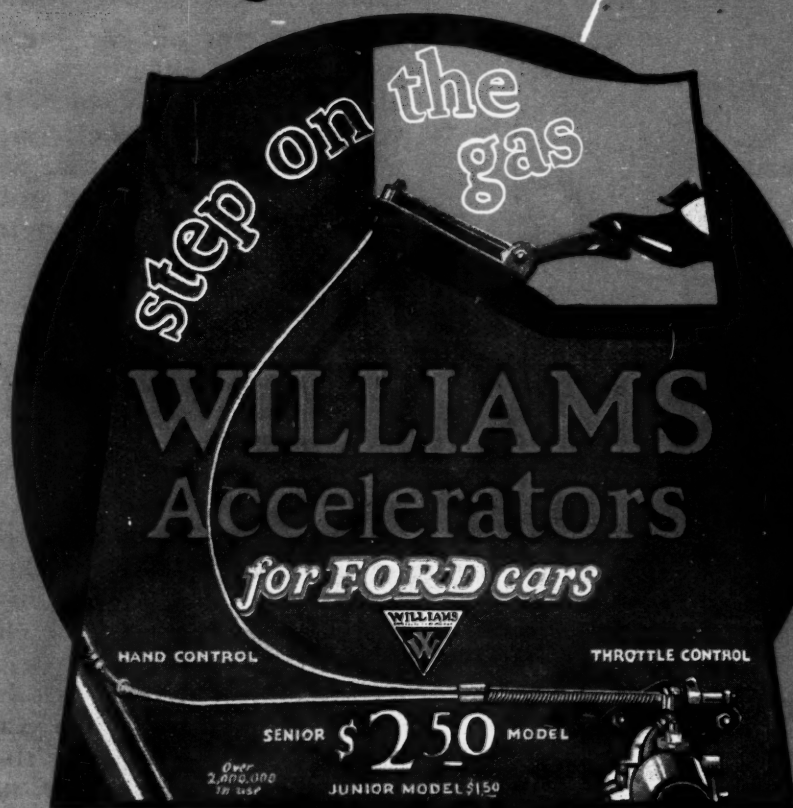
Its completeness simplifies stocking and insures quicker turnover. The same high quality principles that have swept Farran-oid Fan Belts into leadership are embodied in all Farran-oid Products. The line comprises fan belts, radiator hose, garage air hose, blowout patches, door checks, car washing hose, tire flaps, tube patches and Ford floor mats.

[We back you up with a real sales plan.
Your jobber will gladly explain it.]

THE FARRAN-OID COMPANY, Akron, Ohio

Farran-oid Products

A new and powerful silent salesman



Order One
from your jobber *Today!*

Here is the new Williams Demonstrating Counter Display Stand—built to sell more Williams Accelerators for you. It fits handily on any counter or in any window. It is produced in five colors—oil paint process so that it lasts indefinitely. Its easel back takes up but little space, and an actual, working, full size Senior Model Williams Accelerator is mounted on every stand. Illustrates the "under hood" features of the Williams Accelerators. We give you the stand free. You simply pay the regular dealers' price for the accelerator. Your jobber has or can get quickly, one of these Williams Demonstrating Display Stands for you. Order from him today

WILLIAMS BROS. AIRCRAFT CORP.
Twenty-fifth and Potrero Avenue San Francisco, California
Williams Accelerators are made in two models—
Senior, \$2.50—Junior, \$1.50

It takes just 10 minutes



The One-arm Driver

OF COURSE you never went one-arm driving, but lots of people do. And they are the ones we are talking about.

It's one of those balmy evenings you read about in books. There is a moon as big as a disc wheel. The girl is there. We might even say the girl is there. You throttle the old bus down to three miles per and then—

She gives a cough and a choke and starts shivering and shimmying all over the lot. We are speaking of the bus—not the girl. And Romance goes blooey!

Moral:—Any darn car can make 40 miles an hour. But the boat that can throttle down to nothing and a half flat and still flow along sweet as cream—Boy that's a car!

A Craverailer makes any old car that kind of car.

AND we don't care if you come from the middle of Missouri—a Craverailer can show you.

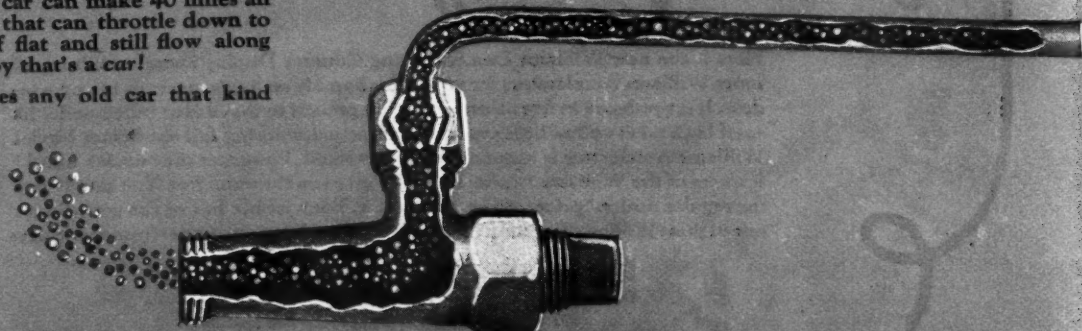
Just take any car from a Ford to a Rolls-Royce that has run long enough to be pretty well carbonized and shows a tendency to buck at low speeds and hold back on high. Put a Craverailer on her. It will take you about five minutes to do it.

Start up the old engine. In five more minutes you will notice that car can idle along as quiet as a lamb. In ten minutes you will think somebody must have put in a new engine, while you weren't looking. All the pull and power and sweetness the makers built into your engine will be back on the job again.

How does Craverailer do it? Sure, we'll tell you. It's no secret.

Craverailer simply gives to the valves, stems, guides, piston rings and cylinder walls something they always need and never get—proper lubrication. Craverailer introduces into the intake manifold the specially prepared Craverail. There, this oil, in vaporized form, mixes with the gas vapor and enters the combustion chamber, where it thoroughly and effectively lubricates the working parts of the chamber. If you want to know just how effectively—examine the exhaust valve after five minutes of operation of the Craverailer. You will find that valve no longer dry, but well lubricated.

Isn't a device worth twelve dollars and fifty cents—if it will tone up your engine, keep valves in perfect condition and make valve grinding a thing of the past? Now really, isn't it?



to sell you for life on the
CRAVEROILER
PATENTED MAY 6TH 1925
THE COMBUSTION CHAMBER LUBRICATOR



\$12⁵⁰

**FITS
ANY
CAR**

CRAVEROILER COMPANY of AMERICA

Division of MILLER LOCK COMPANY

Frankford, Philadelphia, U. S. A.

VALVE FACE GRINDING MACHINE

**Investigate the
"SIOUX" Before
You Buy ANY
Valve-face Grinding Machine!**



THERE'S nothing else on the market just like the Sioux Valve-face Grinding Machine. It stands out in a class by itself when compared with all other tools made for the same class of work. The man who looks 'em all over, picks the "Sioux" every time!

The "Sioux" has established a new standard of speed and accuracy in grinding valves, removing carbon, sharpening valve seat reamers, grinding valve stem ends, etc. It grinds any valve up to $4\frac{1}{2}$ in., handles valve stems up to $\frac{5}{8}$ in., grinds at any angle and has adjustment stops for angles of 30, 45 and 60 degrees.

Comes complete with cross bar, spring, clamp assembled, dresser clamp, bracket and diamond assembled for truing emery wheel, V bracket stand, No. 66 and No. 725 wrenches, set screw wrench, blue print instructions, catalog, valve seat specifications. Equipped with special chuck; driven by $\frac{1}{4}$ h.p. electric motor, 10 ft. cord and plug.

Your Jobber Sells It

ALBERTSON & CO., Sioux City, Ia.

No.
650

PATENT
APPLIED
FOR





What AC Means to the Dealer

New AC Spark Plugs



A new design, new alloy for sparking points, new electrically fused Kyanite insulator core and a new glaze.

AC Carbon-proof Plugs are also made in all sizes.

The demand for AC Spark Plugs is assured through their use as factory equipment on the following cars:

Ajax
Apperson
Buick
Cadillac
Case
Chandler
Chevrolet
Chrysler
Cleveland

Davis
Dodge
Brothers
Durrant
Essex
Flint
Hudson
Kissel
Marmon

Nash
Oakland
Oldsmobile
Paige
Star
Vellie
Westcott
Wills
Sainte
Claire

New AC 1075 for Fords



The special features of the AC 1075 make it the most desirable plug for Fords. Dealers are building a big and profitable business by emphasizing these features in making sales:

- 1 Spring Terminal Clip
- 2 Heavy Body Porcelain
- 3 Hexagon of extra length permits easy and positive application of spark plug wrench
- 4 High Temperature Fins—Patented carbon-proof Porcelain
- 5 Drip electrode forms natural Oil Drain

Made in both one and two-piece design.

DEALERS
who carry AC
products can
build a profit-
able business.

The demand is
assured because
of their use as
car equipment.

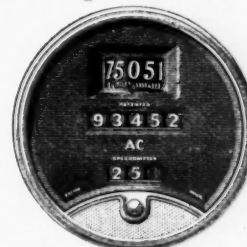
They are backed
by strong adver-
tising.

AC Spark Plug Company, FLINT, Michigan
Makers of AC Spark Plugs—AC Speedometers—AC Air Cleaners

AC-SPHINX
Birmingham
ENGLAND

AC-OLEO
Levallois-Perret
FRANCE

AC Speedometers



The Model for Fords

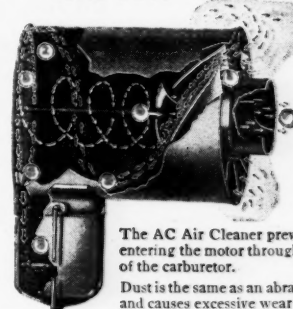
There is proof of the quality of AC Speedometers in the fact that they are used as original factory equipment on Buick, Cadillac, Chandler, Chevrolet, Chrysler, Gray, Oakland, Oldsmobile, Peerless and G. M. C. trucks.

The AC Speedometer for Fords is of the same quality as furnished the above manufacturers for their original factory equipment.

The AC Direct Drive does away with the troublesome swivel joint and insures continuously satisfactory service.

Packed complete with all attachments.

AC Air Cleaners



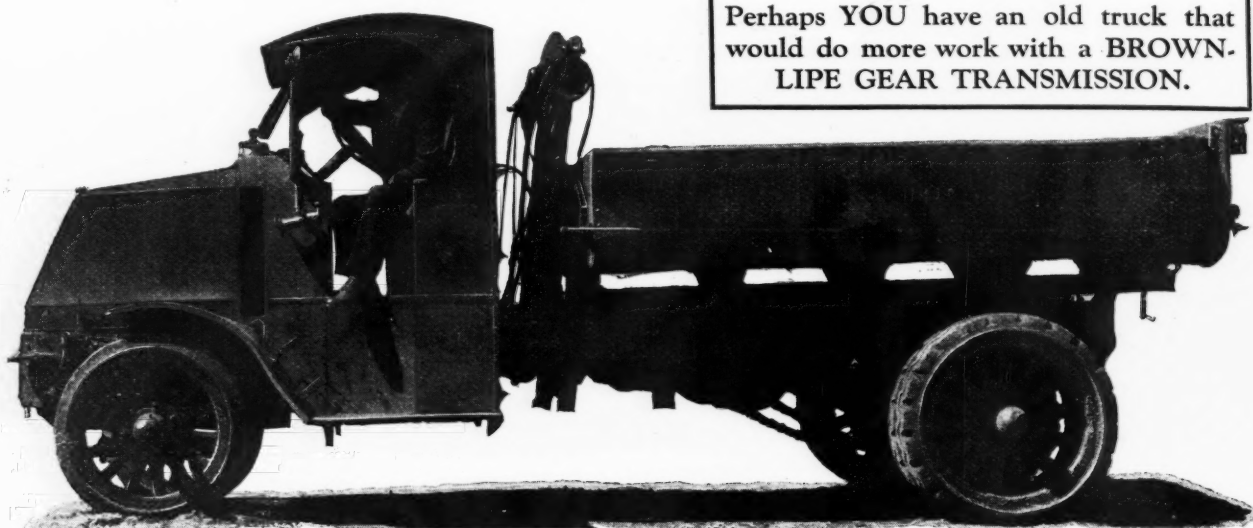
The AC Air Cleaner prevents dust from entering the motor through the air intake of the carburetor.

Dust is the same as an abrasive compound and causes excessive wear on all the motor's moving parts.

AC Air Cleaners are original factory equipment on the 1926 models of Nash, Buick and Oakland.

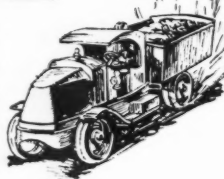
Installation is easy as it connects directly to the carburetor. Once installed it requires no attention as there are no moving parts to get out of order. Packed complete with all attachments.

Models are now ready for Chevrolet, Chrysler Four, Dodge Bros., Ford, Maxwell, Oldsmobile, Star, Studebaker, as well as the 1925 and earlier models of Buick, Nash and Oakland.



Perhaps YOU have an old truck that would do more work with a BROWN-LIPE GEAR TRANSMISSION.

Long-Used Truck Becomes Fleet Leader with a BROWN-LIPE TRANSMISSION!



by Philip Bremer, Truck Owner
Rochester, N. Y.

"I was up against it last year. I had a 1918, 3-speed, 5-ton truck. The fleet I worked with included several new 1925 models of the same make with 4 speeds. Invariably they beat me to the dump. My services were not in former demand.

"I figured on buying a new truck, and found it would cost me \$4,000 in addition to my old one. I was worrying about this when a friend suggested I see the Genuine Parts Sales Inc., of this city. For \$506 they installed ahead of the old transmission, a BROWN-LIPE GEAR Model 60 3-speed Supplementary Transmission.

"Now things are changed. I may be second or third in line for loading, but I'm first at the dump. With my Brown-Lipe Transmission in direct, I have my original three speeds, and the high and low ranges each gives me three more forward and one more in reverse, making nine speeds going and three backing up.

"The low range lets me pull through where the other fellows get stalled. In the high range, I can run away from them on the road. A touring car paced me one day and I showed a 27-mile gait, loaded! The boys now bet on me against any other 5-tonner that comes along.

"I pull a third more tonnage a day than ever before and haven't had a bit of trouble. No sir, I wouldn't take that Brown-Lipe Supplementary Transmission off for \$1,000. I'm always in demand now!"

Philip Bremer



If you know anyone with a problem like Mr. Bremer's, we can help him. Complete mechanical details about the Bremer installation sent free upon request.

BROWN-LIPE GEAR CO. - Syracuse, N. Y.

SAN FRANCISCO

CHICAGO

DETROIT

NEW YORK

LONDON, ENG.

The **BUICK** *Franchise means* **Confidence**

Confidence is one of the most valuable assets of the Buick dealer—

His own confidence in the stability of the Buick Motor Company—

His own confidence in the resourcefulness of Buick and its ability to look ahead and meet all changes in public desire—

And then that vast public confidence which the Buick product has won through twenty-one years.

Everyone thinks well of this famous motor car.

the Better **BUICK**

BUICK MOTOR COMPANY, FLINT, MICHIGAN

Division of General Motors Corporation

Pioneer Builders of
Valve-in-Head Motor Cars

Branches in All Principal
Cities—Dealers Everywhere

WHEN BETTER AUTOMOBILES ARE BUILT, BUICK WILL BUILD THEM

Gaining in Sales Each Year!

The Easiest Way To Fix Punctures



And as Easy to Sell As It Is to Use

The Shaler Vulcanizer has been advertised for so many years that most motorists know about it and are ready to buy from the first dealer who says, "Here it is."

The dealer who keeps it out in front and makes it easy to buy, makes the sale.

We are always glad to furnish dealers with attractive display material to tie up with our big national advertising in publications like The Saturday Evening Post. Send for it today.

In spite of the fact that 1924 was the biggest year Shaler has ever had, sales for 1925 are showing an increase of more than 30 per cent over last year. This also means that last year's record of 40 million Patch-&-Heat Units—repeat business produced by the sale of Shaler Vulcanizers in previous years—will be broken. This year's shipments of Patch-&-Heat Units are averaging over a million a week!

And now, with balloon tires as standard equipment on most cars, next year is certain to see a big increase in tire repair work, and a corresponding increase in the use of Shaler 5-Minute Vulcanizers by motorists.

The beauty about the Shaler is that every sale brings repeat sales. Motorists do not go back to Grandpa's way of sticking on cold patches after they have tried the Shaler. They become constant repeat customers for Shaler Patch-&-Heat Units.

A. E. A. SHOW

In addition to our exhibit at the Automóvive Equipment Association Show at the Coliseum, Chicago, November 9 to 14, we shall maintain quarters at three hotels and shall be very glad to have you call.

At the Blackstone

ROBERT B. DUNLAP

Sales Manager

F. O. TRUE

Middle West

E. B. CARROLL

Service Manager

A. W. DIMOND

West of Rockies

Foreign Sales

SHALER EXPORT CORP.

17 Moore St., New York, N. Y.

At the Congress

R. E. MALONE

Ass't Sales Manager

J. E. COLLEY

South

W. F. MINNICH

South

At the Old Colony Club, Hotel La Salle

PRESCOTT W. ROBINSON

Canada

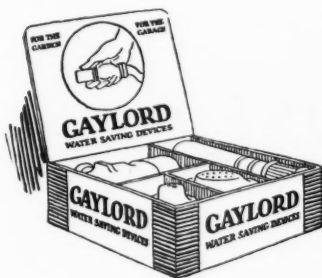
C. A. SHALER COMPANY

Main Offices and Factory
Waupun, Wisconsin, U. S. A.

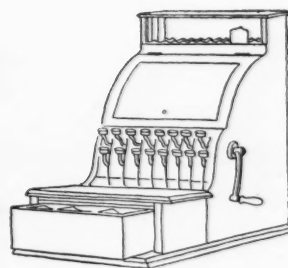
Branch Factories

Beeston, England
Montreal, Canada





Off your counter and into your cash register



New merchandise that is ten years old
Sweet sellers—packed right—priced right

THIS is the first announcement to offer you Gaylord Water Saving Devices—ten years on the market—as a brand new line of goods.

What's back of it? Three things!

First, this is the only merchandise of its kind—and ten years have been needed to perfect all the items.

Second, whereas we have been producing ten thousand units at a time, we are now in production on a quarter million basis.

Therefore, and this is the third factor, we can now offer this merchandise, packed in attractive cartons, at lower prices than you would ever imagine possible—no matter how long you've been selling hardware and auto accessories.

We want the same things you do—volume sales and quick turn-over with the logical margin of profit.

We say, on the strength of our ten years' experience, that this is merchandise which sells itself off the counter and into the cash register. We say that this merchandise is

right—packed right and priced right.

Here's the line

Gaylord Water Saver—needed on the end of every hose. When you press on the button, the water flows. When you let go, the water shuts itself off. (No springs.) List price \$2.00.

Gaylord Nozzles—seven styles—providing the right stream for every job of sprinkling or washing. The Nozzles go onto the Water-Saver or direct on the hose. List price .50 each.

Gaylord Sponge Washer—feeds a stream of water through a sponge. This means that for any washing job you can have a sponge that's always clean and—with the Water-Saver—as wet as you want. List price \$2.00.

Gaylord Hose Reel—which fits right onto the pipe or hydrant and feeds water into the hose through an arm of the reel—a hose full of water always ready for use. List price \$7.50.

Gaylord Overhead Washer—formerly known as the "Ideal"—the oldest and simplest on the market, with several features found in

no other merchandise of the kind. List price \$16.00—without electric light. \$34.00 with light attachment.

Special combination offers

All Gaylord Devices are sold individually and also in special combination cartons for their various uses—for the garden, around the home, for the commercial garage, for the private garage.

The outstanding advantages to your customers are—water-saving, time-saving, labor-saving and the elimination of puddles and the mess from wasted water.

What we want

We want you to write today for our booklet "Beating the Water Meter" which describes the Gaylord line in detail—and tell us whether you would be interested in our jobber proposition, our dealer proposition—or whether, as a garageman, you want to learn how to wash two cars in the time you now need for one.

Sales offices:

A. K. TROUT CO., INC.,
342 Madison Avenue, New York, N. Y.

Factory:

GAYLORD MANUFACTURING CO.
Paterson, N. J.

Jobbers and Dealers:

Please write for our proposition; we'll interest you

GAYLORD

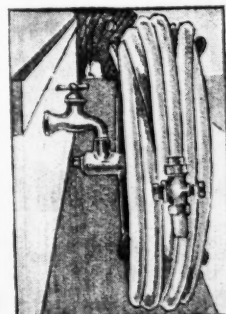
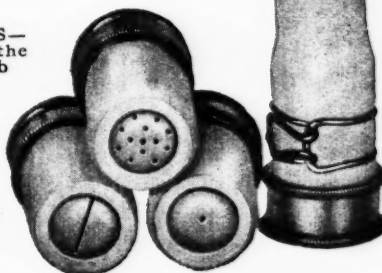
WATER SAVING DEVICES



GAYLORD WATER SAVER
—needed on the end of every hose



GAYLORD NOZZLES—
seven styles—giving the
right stream for every job



GAYLORD HOSE REEL
—fits right onto the hydrant



GAYLORD SPONGE WASHER
—feeds a stream of water through a sponge

NOW
you can get

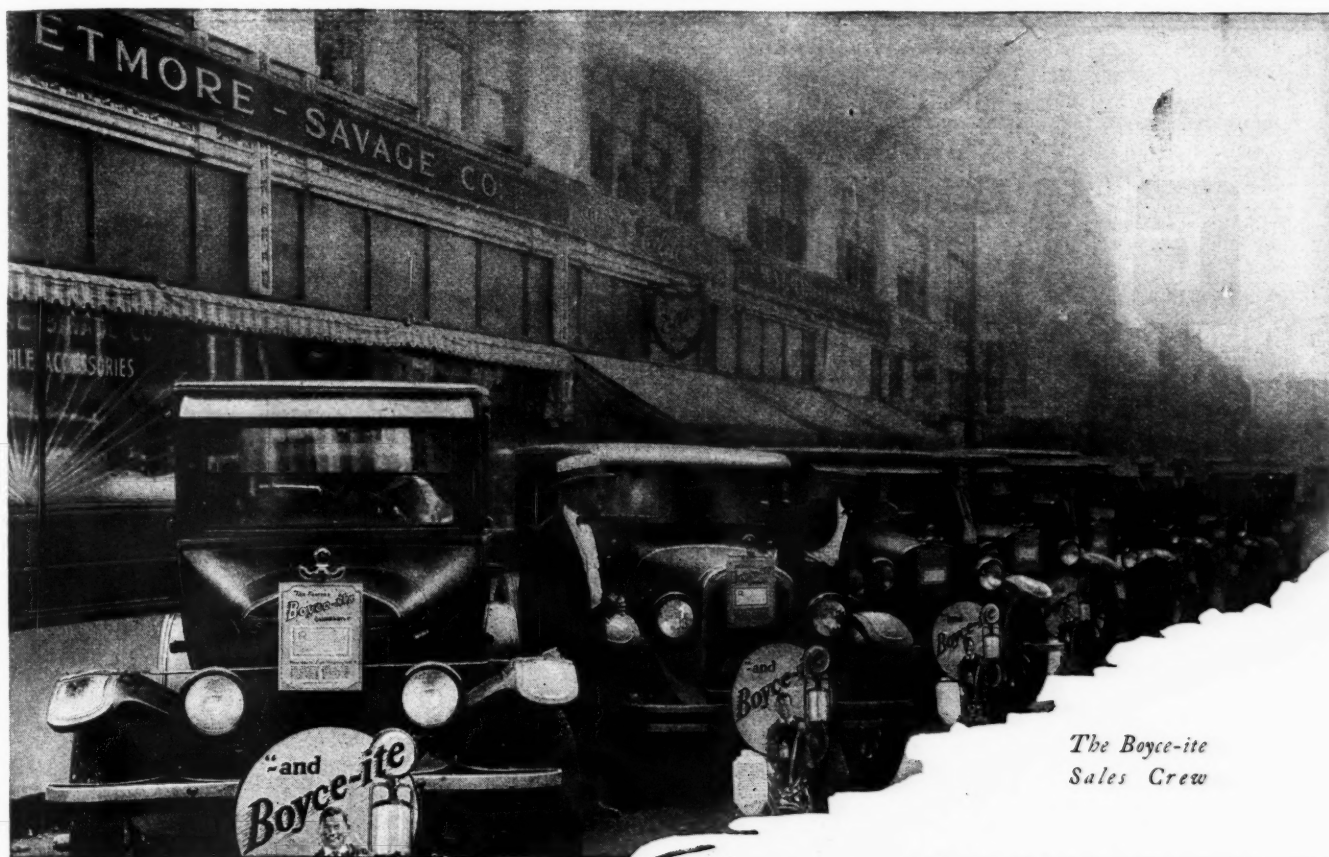
**McQUAY-NORRIS
PISTONS
PINS
BEARINGS**

For Ford - - Chevrolet - -
Dodge and Overland in
special bulk packages at
attractively lower prices.

Be sure your distributor's sales-
man tells you about them.

The Complete **McQUAY-NORRIS** *parts line*
PISTON RINGS-PISTONS-PINS-BEARINGS

McQUAY-NORRIS MANUFACTURING COMPANY. General Offices: ST. LOUIS, U. S. A.
Factories: St. Louis, Indianapolis, Connersville, Ind.; Toronto, Canada



*The Boyce-ite
Sales Crew*

Co-operation

Boyce-ite co-operation with jobber and dealer does not stop with the initial order. Every aid known to modern merchandising is placed behind the men who are selling Boyce-ite. Booklets, counter cards, window trims and streamers are furnished in generous quantities.

Newspaper advertising on the famous large-size Boyce-ite schedule is put behind one territory at a time. And a steady campaign of national advertising keeps the consumer sold on the merits of this amazing gasoline improver.

Boyce-ite is a steady all-year seller.

Boyce-ite

BOYCE & VEEDER CO., Inc., Long Island City, N.Y., U.S.A.



GATES HOSE

"The Standardized Radiator Hose"



Marked by Inches
Easily Cut to Length

Colder weather means that the inner lining of radiator hose is subjected to the attacks of anti-freeze mixtures. That's why it's especially important right now to protect your good customers by selling them the hose with the tougher rubber lining — the Gates Vulco.

Made by the World's Largest
Manufacturers of Fan Belts



**U.S. PORTABLE
ELECTRIC
DRILLS**
GRINDERS — POLISHERS
The Good Mechanic Knows

*They Make
Light Work
of Heavy Jobs*

The U. S. Symbol is the sign of
quality in Portable Electric Tools.

U. S. Drill Girl posed by
Yvonne Grey of the Zieg-
feld Follies. Lower picture
shows Dave Lewis at finish
of Indianapolis 500 mile
race, May 30, 1925.

“—and extremely easy
to handle,” says Dave Lewis.

Excerpt from Mr. Lewis' letter reads:

“I have had several opportunities to use the “U. S.” ½ in. special drill, since the Indianapolis race, May 30th, and wish to state that it is running very smoothly. Incidentally, it is a very powerful tool, and extremely easy to handle. All of those features please me very highly.”

*U. S. Drill Quality Is Measured
by the Following*

Chrome Nickel Steel Gears Hardened,
Run in Grease.

All Armatures Mounted on SKF Ball
Bearings in all U. S. Drills—no excep-
tions.

SKF Ball Thrust Bearings.

Most Powerful Universal Motor.

Jacobs Screw Back Chuck—Easily Re-
moved.

Quick Make and Quick Break Double
Pole Switch. When Switch is in Off
Position Motor is Free from Current.

Handles in Line Keep U. S. Drills in
Line. Perfect balance means perfect
holes.

—and in addition to all this U. S. Drills
“make light work of heavy jobs.” Users,
without exception, say exactly what Mr.
Lewis said—“U. S. Drills are extremely
easy to handle.”

**COMPLETE
STOCKS
CARRIED
IN ALL
SERVICE
STATIONS**

Boston
Buffalo
Chicago
Cleveland

Dallas
Detroit
Houston
Kansas City
Los Angeles
Minneapolis
New York
Philadelphia
Pittsburgh
St. Louis
Toledo
San Francisco

THE UNITED STATES ELECTRICAL TOOL CO. CINCINNATI, OHIO, U. S. A.

Oldest Builder of Portable Electric Drills in the World



This up-to-the-minute Parts Department is equipped with a LAPS system and Lupton Display Counter—Service Motor Co., Duluth, Minn.

We say—

THE use of a LAPS system in your parts department will save time and floor space, promote display, systematically store parts, improve service, and increase sales. A LAPS system pays for itself in the profits it brings.

You ought to know what one of these efficient steel storage systems will do for your business. Read what it does for other dealers all over the country; then write for detailed information.

Dealers say—

Read what dealers have written us about their LAPS systems.

In Nebraska

"We have been able to see a great improvement in the handling of our parts since putting in the Lupton system. We have economized greatly on our own time as well as the customer's and are certain that we have increased our parts sales very materially."

In Massachusetts

"Our \$60,000 stock is now carried in 50% of the space previously used, and, due to the scientific layout of your system, we find it possible to do a greater volume of business with less help and effect a more rapid turnover of our stock."

In Oregon

"We find this system to be the most compact, efficient method that could be installed for the stocking and servicing of Ford parts. Space provided for the different parts is very well proportioned and in accordance with the stock as carried by us."

In Louisiana

"We have found our Lupton Steel Storage System for Auto Parts to be *system* in the true sense of the word; it enables us to keep our stock in constant balance; softens the chore of making stock orders; reduces labor and time in inventorying greatly; and last, but not least, we are always able to get parts needed in a moment's time. Your system makes dollars for us every day."

In North Carolina

"On September first of last year, we installed one of your 50 units Ford System, also display counter which cost us \$2500. We feel like it was the best money we ever spent. Since that time our parts business has increased 50% on sales."

In Pennsylvania

"We are able to keep our stock well displayed and clean."

In Michigan

"We feel quite proud of the general appearance of this department and, without a question of doubt, your Lupton units are playing a big part in making this department an attractive one."

LAPS Ford Systems take care of new model Ford parts

DAVID LUPTON'S SONS CO.

Main Office and Factory—Philadelphia

2631 Woodward Avenue, DETROIT

LAPS Systems are sold by leading jobbers everywhere

LUPTON AUTO-PARTS STORAGE



The Story of the Flint Is Being Told

- Q Since the first Flint was built there has never been a time when production was up to sales, and there has never been a month in the history of the Flint Motor Company that has not shown an increase!
- Q This remarkable record has been made without forced selling methods, without undue pressure on the dealer and the public, even without advertising!
- Q Now, with the completion of one of the largest and finest manufacturing plants in the country, the facilities for supplying the demand for the Flint are greatly increased.
- Q The addition of an aggressive merchandising and advertising plan has been made, and Flint dealership agreements will now be even more valuable than ever before.
- Q And the Story of the Flint will now be told to all. The millions will know through advertising what the thousands have learned through actual ownership.
- Q Do you want to hear the story of the Flint we have for dealers?

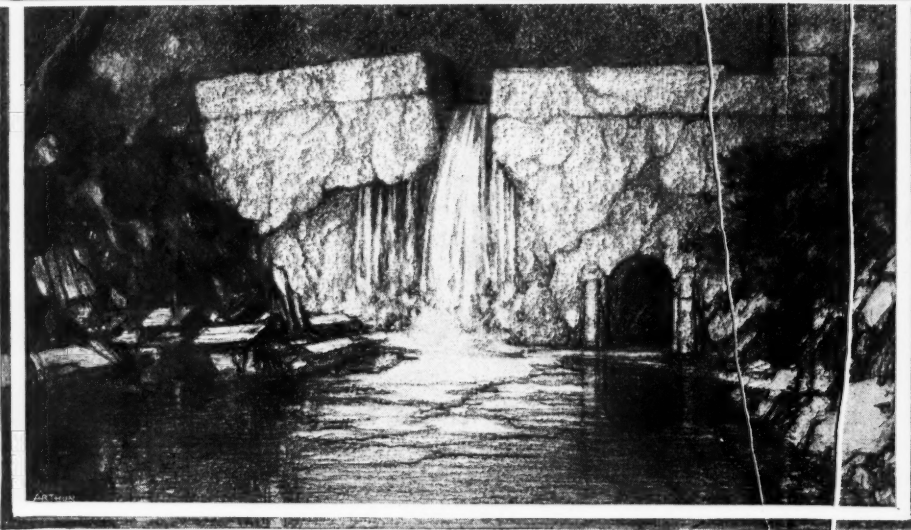
Vice President and General Manager

FLINT MOTOR COMPANY
FLINT, MICHIGAN

BUILDERS OF HIGH GRADE MOTOR CARS

FLINT SIX

THE STORY OF THE EMPIRE NEW PROCESS BOLT—Chapter 2. No. 5



When the wall crumbles

THE thread of a bolt is like the wall of a dam. If it falls, there is trouble. And fall it does, far too often.

There are not many greater sources of waste than stripped or ill fitting threads. It costs money to throw away a bolt. It costs money to wrestle with a bolt that won't fit. It costs money to deliver a job with a weak bolt, or a number of weak bolts, on it.

In other words, it costs money to use cut thread bolts. Some fit, some don't. Some strip, some don't. There's an expensive element of speculation in every shipment.

The Cause of Weak Threads

If a bolt should be strong anywhere, it should be strong at the thread. Yet here a cut thread bolt is weakest.

When the die cuts into the bolt to make the thread, it breaks down the molecular structure of the steel. It is like a sand-and-cement structure that hasn't properly bonded; any strain will cause it to crumble.

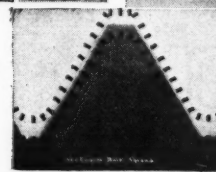
Why Empire Threads Are Strong

The method used in threading an Empire New Process bolt is the exact reverse of cutting in its effect on the structure of the steel. The dies, instead of cutting the thread, build it up under pressure on a specially prepared blank. The steel molecules are pressed into nearer contact with each other, making the bolt stronger where the thread is than at any other point.

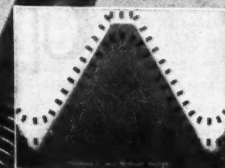
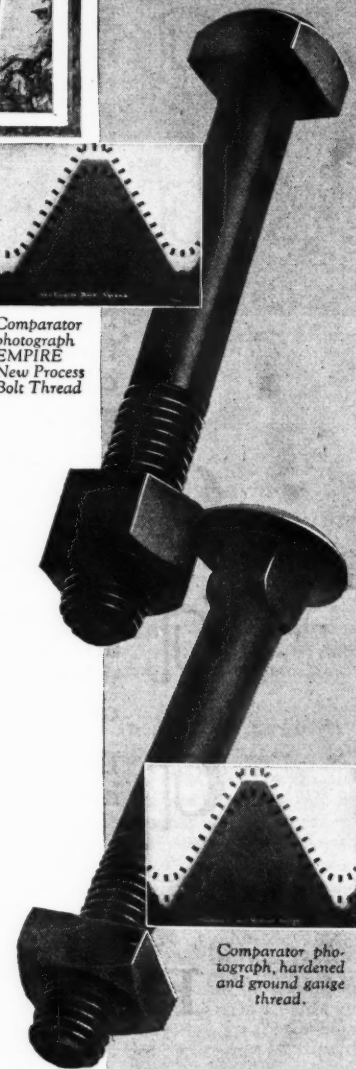
This is as it should be. The thread, unless you strike it a tremendous blow with a hammer, will never strip. No matter what sort of misfit nut you try to force on it, you can't injure that thread.

Think of having bolts you can rely on so completely! Think of the money you save—the time, the trouble, the risk! New Process bolts sell at regular Empire catalog prices. You pay no more for the advantages they bring you.

And what those advantages are you can judge for yourself by testing some sample bolts. Just ask for them.



Comparator photograph
EMPIRE
New Process
Bolt Thread



Comparator photograph, hardened and ground gauge thread.

RUSSELL, BURDSALL & WARD BOLT & NUT COMPANY

PORT CHESTER, N.Y.

Branch Office: Straus Building CHICAGO	Branch Office: General Motors Bldg. DETROIT	Branch Factory: ROCK FALLS, Ills.	Strimple & Gillette 160 Jackson Street SEATTLE	Maydwell & Hartzell, Inc. 158-168 Eleventh Street SAN FRANCISCO
--	---	---	--	---

Makers of Bolts, Nuts and Rivets Since 1845

EMPIRE

New Process BOLTS

Rickenbacker

A • CAR • WORTHY • OF • ITS • NAME

Success

In the four years since its inception, Rickenbacker Motor Company has built an organization, larger, more efficient and more prosperous than that achieved by many concerns in twice or three times that period.

Today this organization consists of 103 direct distributors and more than 600 associate distributors; 14 distributors in Canada and 43 world distributors—located in as many leading centers of other countries.

This organization with its sales and service experts now comprises an army 10,000 strong.

Thus we have not only placed this product within reach of buyers everywhere but it is now also true that wherever a Rickenbacker owner may find himself there he will also be accorded instant, intelligent and courteous service.

Drive this Rickenbacker yourself—it will be a revelation to you.

Rickenbacker Motor Company
Detroit, Michigan

Famous "Six" Prices

Phaeton	\$1495
Coach-Brougham	1595
Roadster	1595
Coupe-Roadster	1695
Sedan	1795
De Luxe Coupe.....	1995



f. o. b. factory—plus wear tax

Vertical "Eight" Prices

Phaeton	\$1995
Brougham	1995
Roadster	1995
Coupe-Roadster	2095
Sedan	2195
De Luxe Coupe.....	2320

ZENITH

You Can Now Supply Your Trade
with a

ZENITH

CARBURETOR

completely equipped, tested and with proper setting, for quick and easy installation on 86% of all registered cars. Each outfit comes carefully packed in an individual box with full installation instructions.

Auburn	\$17.00	Maxwell	\$14.90
Cadillac 51-57	37.50	Moon	17.00
Cadillac 59-61	60.00	Oakland 6-54	16.00
Chevrolet 490	12.50	Oldsmobile 1923-5	13.50
Chevrolet K	12.50	Oldsmobile 1926	17.60
Chrysler 4	14.90	Overland 4	13.50
Chrysler 6	30.00	Overland 6	14.00
Cleveland	16.75	Packard 116-126	38.00
Columbia	17.00	Packard Truck	50.00
Davis	17.00	Reo 6	21.50
Dodge	19.00	Reo Speed Wagon	15.00
Durant A-22	15.00	Star	16.55
Essex 6	22.50	Studebaker Light 6	13.50
Elcar	17.00	Studebaker Standard 6	14.50
Flint 40	15.00	Studebaker Special 6	28.50
Ford	9.50	Studebaker Big 6	30.55
Gardner 4	15.00	White G O & G N	27.50
Gray	14.50	White G K	27.10
Hudson	22.50	White G E C	31.50
Hudson Dual	57.50	White G M	29.50
Hupmobile R	13.50	White G A	29.00
Mack A B	37.50	Willys-Knight 4	19.00
Mack A C	40.00	Willys-Knight 6	21.00

The Zenith Carburetor gives the owner the same dependable carburetion that made possible the first trans-Continental, trans-Atlantic and trans-Pacific flights, the epoch-making "round the world" flight and many other notable achievements on the land, in the air and on the water. When human life hangs on dependable carburetion, the Zenith is chosen. *There is a Zenith for every make of car or truck.*

Write for special descriptive literature and dealer's proposition.

ZENITH-DETROIT CORPORATION

Branches:
NEW YORK
CLEVELAND
CHICAGO

Manufacturer of
ZENITH CARBURETORS
Over 1100 Service Stations

MAIN OFFICE
and FACTORY
DETROIT
MICHIGAN



To help Chevrolet dealers and salesmen make new sales records and greater profits during the months of October and November Chevrolet is conducting the greatest sales contest ever held in the automobile industry.

This is just another of the constant stream of sales ideas coming from the Chevrolet factory that adds to the value of a Chevrolet franchise.

CHEVROLET MOTOR COMPANY, DETROIT, MICHIGAN
Division of General Motors Corporation

for Economical Transportation



QUALITY AT LOW COST

Writers who mould automotive thought

He Put "Flat Rates" Upon the Map



P. L. DUMAS
Technical Editor
Automobile Trade Journal

Flat rates were not always as popular as they are today. Once they were regarded as being impractical and purely theoretical. Now all this is changed. Progressive dealers everywhere are interested in the subject and many have adopted them to their lasting satisfaction.

Much of the credit for this change in dealer opinion is due to Paul L. Dumas, formerly of the editorial staff of *MOTOR AGE*, and now technical editor of *Automobile Trade Journal*. From the time of his connection with the automotive industry, he has been an ardent advocate of the flat rate method of selling maintenance operations. So strong, persistent and effective have been his efforts along these lines that he might truly be called the apostle of flat rates.

A flat rate chart which he compiled for *MOTOR AGE* in 1924, covering 101 operations on 23 makes of cars, was the most comprehensive thing of the kind that had been undertaken up to that time and there was an immediate demand from all over the United States for thousands of reprints of it.

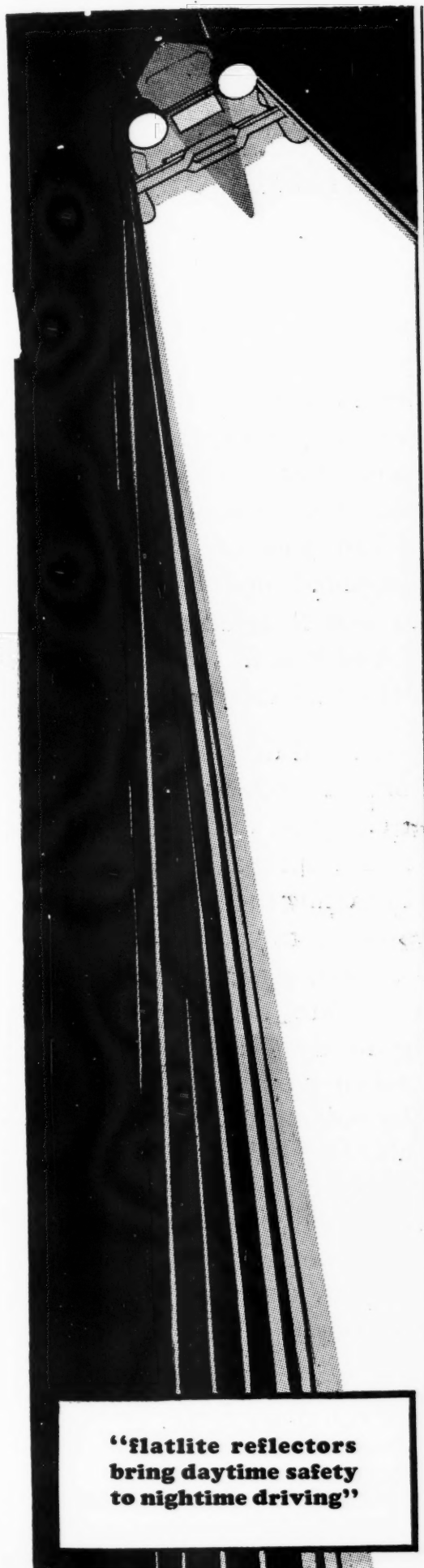
Mr. Dumas literally put flat rates on the map for thousands of dealers, who, but for his forceful writings, would not be practicing this modern method.

But this is not his only claim to your consideration. Mr. Dumas is essentially a practical man. He has been successively a garage mechanic, airplane technician, repair-shop proprietor and airdrome manager. Hence, he has had a great deal of actual experience in the maintenance and operating phases of the industry. This rich experience in actual shop work enables him to analyze almost any mechanical problem and to write about it in a clear and instructive manner.

The organization is fortunate in having a man of Mr. Dumas' ability and experience to write the practical, helpful kind of articles so desired by dealers.

This is the tenth of a series of announcements dealing with the editorial strength of Chilton Class Journal publications. Each issue will carry a brief sketch of an editor or principal contributor to the group.

The purpose of this series is to place before you the facts about our editorial work so you may know its scope and magnitude and the ability, experience and attainments of the men whose articles you read in these publications.



**"flatlite reflectors
bring daytime safety
to nighttime driving"**

flatlite is a phenomenal success because it fills a real need—a need that has existed since the automobile was first used at night. Never before has a light, powerful enough to light a road as it should be lighted to be safe, been lawful. flatlite removed the glare danger and unbottled all the light at the same time.

From every merchandising viewpoint flatlite is a perfect accessory —

POINT

1

Every car owner needs the kind of light that flatlites give. This means the widest possible market that any accessory can enjoy.

POINT

2

The two ways in which flatlites are sold take care of every car owner's requirements. If his present headlamps are good—you sell him flatlite reflectors. If he needs new headlamps—you sell him flatlite headlamps.

POINT

3

flatlites are legal everywhere and proved in service. flatlite reflectors are in use everywhere. This proves car-owner acceptance yet leaves a big market still to be supplied

POINT

4

flatlites are easy to stock, easy to sell and easy to install. Three models of reflectors in two sizes supply all headlamps. Four models of flatlite headlamps fit all cars. flatlite reflectors go in right over the old reflectors, plain glass (furnished) replacing patent lenses.

flatlites sell with one simple demonstration to practically every prospect and a flatlite prospect is anybody who owns a car not already equipped to give the kind of light that flatlites give.

POINT

5

flatlites have no known sales resistance. The low price of flatlites is usually a surprise to car owners, and this, balanced against what they bring in comfort, safety and freedom from legal difficulties, makes it quickly apparent that for sheer money's worth, flatlites have no equal in the accessory field.



THE AMERICAN FLATLITE CO.
Reading Road at Dandridge Street
Cincinnati, Ohio

Do You Read Our Editorials?

EVERY once in a while we discover a reader who goes through each issue of MOTOR AGE with great care, and yet manages never to read an editorial.

This raises the question, "Why is an editorial?" You may be quite certain editorials are not written just to fill space, for space in MOTOR AGE is too valuable a commodity to be used in that way. They are meant to be read, and read by just such people as the reader described. Because we believe that it is important that our editorials be read, we see that they are printed in rather large type, well displayed, and inviting to the eye.

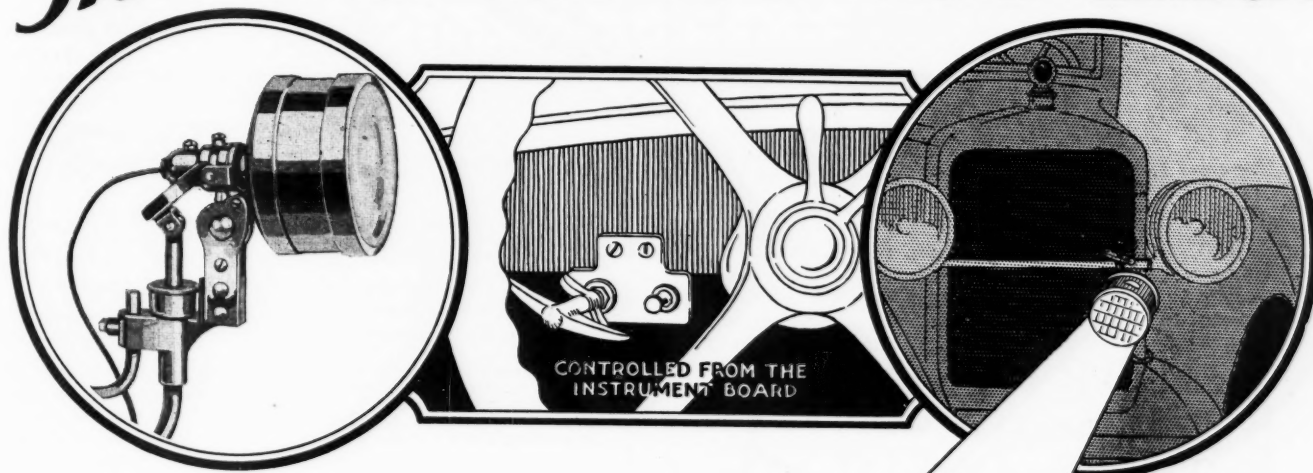
Our editors are well informed men. They study their field—your field—continually. In the process they gain many impressions and form many opinions about the same things that occupy *your* mind when you consider the problems of your own business. They cannot afford to

be dogmatic about these things, nor make their conclusions the basis of authoritative articles, for they may be mistaken. But they can tell you what they think and why—they can pass on to you their personal opinions for you to match against your own. And it is in their editorials that they can do this.

If you could drop into our office once a week for an informal talk with our editors, you would probably gain much by getting their slant on the various controversial questions that you, as a member of the trade, are deciding or helping to decide. By the same token you can gain much by reading our weekly editorials, for it is just here that our editors do talk to you informally, and tell you what they are thinking of on a host of subjects intimately related to your business.

Turn to our editorial page, and see if you don't agree.

The Walden Fore-Lite



A Certain Percentage
of 25
Is Greater Than
The Same
Percentage
of
Something
Less

Walden
Price
Makes Profits
Worth While

You, and all the rest of us, are in business to make money. The products that make it fastest—and honestly—are the ones we want to sell.

That is why we tell you that Walden Fore-Lite profits are worth while. Worth while profits are what you want.

The Walden Fore-Lite lists at a price above that of practically any other driving light on the market—and it sells faster than a lot of cheaper ones. Owners who want good lights want good lights. What they cost—within reason—makes very little difference. Experience—and sales—have proved it.

Out of 17 million owners, there are plenty of ready-made prospects for Walden.

Let's talk it over. It's a money maker.



The Walden Company
1114 S. Michigan Ave. Chicago

AN INNOVATION IN SOCKET WRENCHES



Two Stock Numbers:
No. 774— $\frac{5}{8}$ " Hex.—will reach
Fourth Connecting Rod on
Fords with crank shaft in any
position.
No. 775— $\frac{3}{4}$ " Sq.—will reach
Front Main Bearing and Cen-
ter Main Bearing on Fords
without taking the motor out.

The new feature—the
swivel action of the
handle—makes it one
of the most useful
wrenches we have ever
brought out because it
can be used in many
different positions and
on many different cars.



Ask your Jobber or write us for catalog
WALDEN-WORCESTER
INCORPORATED
WORCESTER, MASS.

MORRISON

Automatic Double Range
Worm Drive JACKS

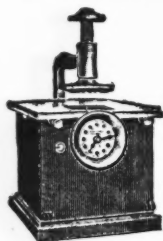
Special model
for Balloons

Can't Slip or Tilt

Flexible steel "Sure Hold" cap prevents dangerous slipping. Long folding handle (36 to 72 in.) operates from standing position. Gets under overhanging bodies. Easy to work. Few turns and it's up. Built in 11 sizes for all service requirements up to 8 tons. Furnished as standard equipment on fine passenger cars, trucks, buses and Fire Apparatus for past 4 years. The Jack for YOUR shop. Write for sample for test.

THE WOODS ENGINEERING CO., Alliance, Ohio

FOLLETT'S NEW MODEL TIME STAMP



accounts for every labor minute

Prints the year, month, day, hour, minute, A.M. or P.M. at the exact moment the plunger is pressed—like this, for example:

NOV 19 1920 4 31 PM

Tells when a job is started—and when it is finished. There can be no dispute over the time charge.

Absolutely automatic—except for winding. Every machine guaranteed.

Follett Time Recording Co., 217 High Street, Newark, N. J.

"Established Since 1904"

PROTECTOMOTOR 99 $\frac{9}{10}$

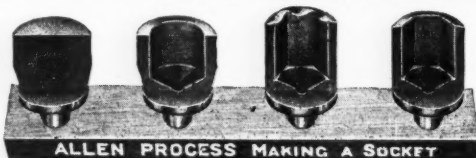
REG. U.S. PAT. OFF.
Perfect Positive Protection

Filters all dust, sand and grit out of air supply to carburetor and motor. Write us for facts.

STAYNEW FILTER CORPORATION
Rochester, N. Y.

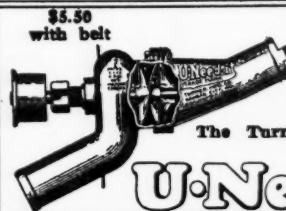
EFFICIENT

Cold-
Drawn
Sockets



ALLEN
Wrench
Sets

The Allen Manufacturing Company, Hartford, Conn.



The Big Seller in the Ford
Pump field—at a new low
price.

Get our dealer plan.
The Turner Mfg. Co., 31st and Reanoke Rd.
Kansas City, Mo.

U-Need-It ROTARY PUMP
for FORDS

BOLTS BLUE PRINT BUSHINGS

"Made to Blue Print"

"Bp"

guarantees to the Replacement Trade the same
high standard of Quality and Accuracy de-
manded by the car manufacturer.

"Bp"

The Fostoria Screw Co., Fostoria, Ohio

Made in many sizes to meet any
and all requirements in garage,
tire repair shop and filling sta-
tion. Six types: Two Stage,
Single Stage, Air Cooled, Water

Cooled, Stationary, Portable.
Our low prices enable you to
get a Compressor for a small
investment. Send for literature.

The United States Air Compressor Co.

5304 Harvard Ave.

Cleveland, Ohio

NATIONAL SHIMS

catalog
on request

National Motor
Bearing Co.
1609 Pine St.,
San Francisco
1449 S. Mich. Ave., Chicago
83 Grand St., New York



A KLEAN-RITE Auto Laundry Fran-
chise Is a Big Money-Maker

Write for a copy of our booklet on "The Business
Possibilities of An Auto Laundry." It contains val-
uable information. Sent free upon request.

KLEAN-RITE AUTO LAUNDRY CO.
1710 E. 75th St., Chicago

MONOGRAM ORIGINAL

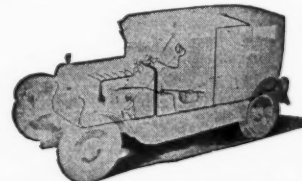
SELF LOCKING  RADIATOR CAP

THE KINGSLEY-MILLER CO.

Successors to
(General Automotive Corporation, Chicago)
600 West Jackson Boulevard Chicago

Packard Cable

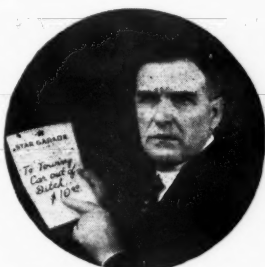
The Packard Electric Co.
Warren, Ohio



Kawneer

SOLID COPPER
STORE FRONTS

Write for Special Book Garage Front
THE KAWNEER CO., 2924 Front St., Niles, Mich.



"I could buy an Autowline at half the cost!"



"Oh, if we only had an Autowline!"



"Out she comes with good old Autowline!"



"A life preserver for every motorist!"

Push the ORIGINAL Wire Rope Towline!

Remember—and tell your trade to remember—that when a towline is needed, it wants to be an absolutely *dependable* one. Keep in mind that **BASLINE AUTOWLINE** is made of genuine Yellow Strand Wire Rope, famous for many years—that it has a reputation for quality, strength and dependability attained by no other towline.

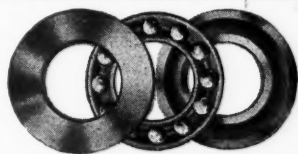
Pays You a Good Profit

Jobbers and Dealers, send for our current price list and you'll see that you can meet the competition of practically any other honest towline on the market—and make some real money doing it!

BRODERICK & BASCOM ROPE CO., St. Louis

Eastern Office and Warehouse, 76 Warren St., New York City

JR339



We offer the services of our Engineers in assisting Designers on layouts involving the use of Thrust Ball Bearings in any type of machine where Thrust Ball Bearings can be used. Our broad experience covers many years. We are ready to serve you at any time.

THE BEARINGS COMPANY OF AMERICA

LANCASTER, PENNA.

Western Sales Office,

1012 Ford Bldg., Detroit, Mich.

Get a Manley

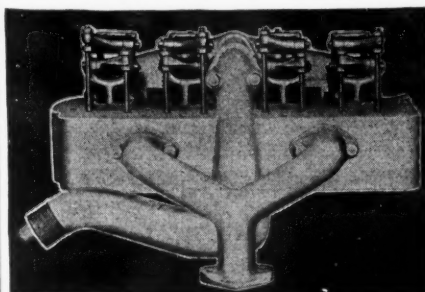


Portable Hoist. A Universal Garage lifting method without an equal. The Manley Hoist is superior because the chains can be positioned anywhere between the legs, thus raising the load always vertically. The legs are doubly braced and will not spread. Automatic brake to lower the load. Legs folded together and Hoist may be placed against the wall entirely out of the way. Two levers with corresponding speeds. Light, strong and easily moved.

Send for Catalog.

MANLEY MFG. CO.
York, Pa.

ROOF 16 OVERHEAD VALVE EQUIPMENT For Ford and Dodge Motors ROOF 8 VALVE HEAD FOR FORD MOTOR



Stupendous Power— Lightning Speed

Ford racing cars with Roof Equipment are rivals on mile and one half mile tracks of the highest priced racing cars. Doubles the pulling power of the Ford or Dodge pleasure car or truck. Hill climbing and general road work beyond wildest dreams of the owner. Complete—ready for installation—no machine work necessary. We are headquarters for all speed equipment. No matter what you want, write us. Racing quality—lowest prices. A postal card brings you complete list of our specialties.

Jobbers—Dealers—Consumers—Write Us.

THE LAUREL MOTORS CORPORATION, ANDERSON, INDIANA

SERVICE-MEN

Start a profitable battery charging service with this

BURTON & ROGERS 5 BATTERY SERVICE CHARGER

and increase your earnings and good-will. Pays for itself in 2-3 months.

**BUILT FOR 110 VOLTS
NO POWER LINE NEEDED**
Standard model 60 cycles, other cycles if desired
**PORTABLE AND RUGGED
PRICE \$60.00 COMPLETE
WITH BULB**

We make larger chargers too
Send for our charger booklet
BURTON & ROGERS MFG. CO.
755 Boylston St., Boston, Mass.



WARE SURE-GRIP
Anti-Skid Chains
PATENTS PENDING
WARE
Wear Longer

Manufactured
by
**CHICAGO ROLLER
SKATE COMPANY**
4458 West Lake Street
CHICAGO ILL.


Write for
Catalog

Completely Gemco
made, the big
selling line
GEMCO MFG. CO.
760 S. Pierce St.
Milwaukee, Wis.

Gemco
BUMPERS

NO TOOLS—It's Self-Closing
Repair Link for Broken Cross
Chains




A Self-Closing Monkey Link attached with
singers to loose ends of broken chain closes
and locks on first turn of wheel. Stops
clanking—saves fender—low-priced. Box of
10 links retails for 25 cents.
Write for samples and discounts.
Distributors wanted.
FLOWER CITY SPECIALTY CO.
Rochester, N. Y.

TAKE THE END-PLAY OUT!
—WITHOUT PULLING THE MOTOR



THE C. A. ADJUSTABLE CENTER BEARING CAP
corrects Ford crankshaft end play and sets magnet to
highest efficiency without removing the motor. Easily
and quickly installed. Guaranteed for one year. List
price \$3.75. Ask your jobber or dealer or write us direct.

ADJUSTABLE BEARING CO., Inc.
Pat'd 7-22-'22 Dept. M. Brazil, Indiana



**DIERINGER
BUSHING REMOVER**

Any spindle bushing out in two min-
utes! Merely insert tool, drive out
with hammer. Full set of 3 sizes
covers all cars. \$4.50. Write for
trade discount. Distributors wanted.
E. T. Dieringer, Box 282, Bolivar, O.

A Quick Seller and a Tremendous Market

FORD, CHEVROLET and OVER-
LAND owners buy this TASCOS Gauge
on sight. It screws in place of the filler
cap—saves "measuring" the gas—and it
is guaranteed for the life of the car.
They sell all the time.



THE AKRON-SELLE CO., Akron, O., U.S.A. **\$1.25
Retail**

"As Silent as a Shadow"
Quincy Compressors
Quincy, Illinois

J-538

LINCOLN
FOR ALL CARS—\$15 to \$40
SHOCK ABSORBERS



CURTIS
AIR COMPRESSORS—HOISTS—TROLLEYS—CRANES
C.P. Mfg. Co.
Curtis Pneumatic
Machinery Co. 1527 Kienlen Ave.
St. Louis, Mo.

A Complete Line of Overland Fours
A Complete Line of Overland Sixes
Willys-Knight Fours—Willys-Knight Sixes
ALL UNDER ONE FRANCHISE


Lycoming
MOTORS


Fine Fours, Sixes and Eights-In-Line

LYCOMING MFG. CO. WILLIAMSPORT, PA.


EKL

Rubber Tubing for the Trade
EKL radiator hose—All-Rubber or Cloth-
Inserted, tire pump hose and windshield
wiper tubing, all in standard lengths, will
show you better profits and your custom-
ers better service.
Insist on EKL Brands when buying
these items.
THE ECLAT RUBBER COMPANY
Cuyahoga Falls, Ohio

TIMKEN
Tapered
ROLLER BEARINGS



20c ea. (Retail)

Write for
Attractive Discounts

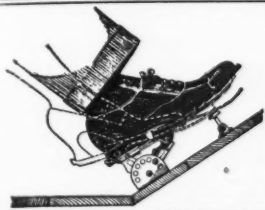
Always Insist Upon
Genuine
Apex Innerings
Most good
Jobbers stock them
If it isn't an Apex—it isn't an
innering
THOMSON MFG. CO.
Dept. C Peoria, Ill.


TIGER CLAW CHAIN

UNIVERSAL SKID-LESS CHAIN COMPANY
NILES MICHIGAN U.S.A.

Thermoid
Hydraulic Compressed
Brake Lining

FROM THICK
TO THIN
DOWN TO THE
LAST PLY
IT HOLDS



The Adams Adjustable Foot Rest

Adjusts comfortably and easily to most convenient height for any driver's leg. Foot lies in normal, restful, uncramped, safe position. Big, fast seller. Senior, \$3.50. Junior, \$1.25. Ask your jobber.

Adams Mfg. Co.

Galesburg

Illinois



They Won't Come Back

Those jobs won't come back showing oil passing, compression loss and crank-case dilution if you use a Hall Hone. The Hall makes cylinders both round and parallel. Ask your jobber.

THE HALL MFG. COMPANY
510 Hall Bldg., 1600-06 Woodland Ave.
Toledo, Ohio

ATWATER KENT

Ignition for FORDS

\$10.80 Including Cables and Fittings.

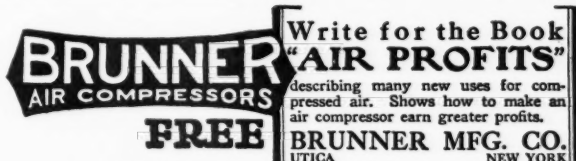


PROTEX TIRE CHAINS

Protex Chain Co., Inc.
Waynesboro, Pa.

Absolutely Stop Skid

Many small horseshoes grip the road and prevent slip. The first scientific anti-skid device.



Write for the Book
"AIR PROFITS"

describing many new uses for compressed air. Shows how to make an air compressor earn greater profits.

BRUNNER MFG. CO.
UTICA NEW YORK

KISSEL

CUSTOM BUILT

Kissel Motor Car Co., Hartford, Wis.

Prest-O-Lite

STARTING AND LIGHTING BATTERIES

Powerful — Dependable — Economical

Backed by a World-wide Service Organization

THE PREST-O-LITE CO., Inc., Indianapolis, Ind.

New York

San Francisco

In Canada—Prest-O-Lite Co. of Canada, Ltd., Toronto, Ont.

Johns-Manville

ASBESTOS BRAKE LINING

The Original
Bosch

Franchise details for selling ORIGINAL BOSCH Automotive Equipment will be sent to any Distributor, Dealer or Service Station on request.

ROBERT BOSCH MAGNETO CO., Inc.
109 West 64th Street New York, N. Y.



ORIGINAL BOSCH units bear the full name, Robert Bosch, and the trade mark shown at left. These are the identifications of Bosch quality—famous since 1887

RAMCO INNER RINGS

fit behind piston rings and keep them in perfect contact with the cylinder walls at any motor speed or temperature.

RAMSEY ACCESSORIES MFG. CORP., ST. LOUIS, MO.

CLASSIFIED ADVERTISING

PARTS

AUTO PARTS

SAVES 50% to 75% ON ALL CARS

New and Used Gears—Springs and Axles—Cylinders—Motors—Rear Systems, etc. Wire or Write

INDIANA AUTO PARTS CO.
608-10 N. CAPITOL AVE., INDIANAPOLIS, IND.
LARGEST CAR WRECKERS IN INDIANA

HOUSE OF A MILLION AUTO PARTS

The largest stock of new and used car and truck parts in the world. We have everything. Always mention model and serial number in order. Write us. All inquiries answered promptly.

DOUGLAS AUTO PARTS CO., INC.
2003 S. 7th St. Chicago, Ill.

DOWMETAL PISTONS

Lighter, stronger, and longer wearing than aluminum or iron. Can be fitted with bronze bushings in the wrist pin holes same as in iron pistons. Dowmetal has no permanent growth. The expansion is little more than iron.

SEND FOR PARTICULARS

LAMBERT & MANN CO.
Cylinder and Crankshaft Grinding
215-21 N. Wood St. CHICAGO Phone West 4918

PATENTS and PATENT ATTORNEYS

Attorney-at-Law and Solicitor of Patents

C. L. PARKER

Formerly Member Examining Corps, United States Patent Office

American and foreign Patents secured. Searches made to determine patentability and validity. Patent suits conducted. Pamphlet of instruction sent upon request.
McGill Building, WASHINGTON, D. C.

PATENTS

Secured, Trade-Marks and Copyrights Registered
Prompt service. Highest references. Established 1864.
Milo B. Stevens & Co., Registered Patent Attorneys.
Office: 639 F St., Washington, D. C.
10 Monadnock Block, Chicago, Ill.

AGENTS and DISTRIBUTORS

Distributors and Representatives wanted everywhere. Exclusive necessity. Kelly Automatic Roadlite. Ford, Chevrolet, Overland and all others. John B. Kelly, 5958 W. Washington Blvd., Chicago, Ill.

FOR SALE

FOR SALE—Elk Burnishing and Shaving Machine, practically new, in perfect condition. Suitable for large shop with volume of work on connecting rod and main bearings, or for cylinder regrinding shop. Box 6250, Motor Age, 5 S. Wabash Ave., Chicago, Ill.

BUSINESS OPPORTUNITIES

FOR SALE—Small Garage and Accessory Store in Southern New Mexico. Prosperous community. Good reasons for selling. Address 3617 Douglas St., El Paso, Texas.

HELP WANTED

Hudson Essex Distributor in Southern City of 40,000 wants High Powered salesman familiar with line. Will pay salary and commission or will give very liberal commission contract to man who can deliver goods. City located near seacoast, fine climate and ideal place to live. Address Box 6249, Motor Age, 5 S. Wabash Ave., Chicago, Ill.

Clean Hands After the Dirtiest Jobs



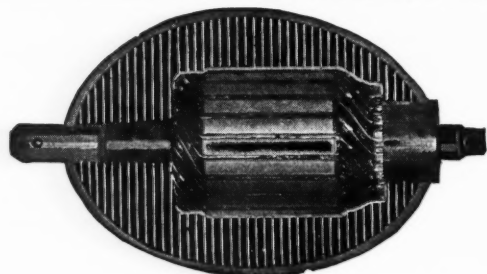
BOON is not a soap but a pleasant, easily applied antiseptic solvent cream that enables one to do the dirtiest work, yet keep the hands absolutely clean. Compounded after considerable research for the automotive trade.

When applied before working, grease, road dirt, oil, paint, tar, etc., can be easily removed by washing with plain soap and water, making the use of gasoline, turpentine and similar injurious liquids unnecessary.

The proper and continued use of BOON also reduces the danger of infection from dirty oils, greases, tools, etc., to a minimum.

Send for sample.

Boon Manufacturing Co.
135 Front Street New York City



LIVE Ones Cash In on DEAD Armatures

Ship burnt-out armatures to Fredericks and exchange them for rewound ones guaranteed for 90 days. A little booklet, chuck full of interesting dope and prices, will be sent to you free if you'll just send your name.

FORD GENERATOR Armatures Rewound.....	\$1.50
FORD Starter Armatures Rewound.....	1.50
ALL OTHER TYPES TWO-UNIT Generator Armatures Rewound.....	3.25
ALL OTHER TYPES TWO-UNIT Starter Armatures Rewound.....	3.25
ALL TYPES MOTOR GENERATOR Armatures Rewound.....	8.00

GUARANTEED to give the same satisfaction as new armatures.

The H. M. FREDERICKS CO., Lock Haven, Pa.

FREDERICKS
Rewinding Service

Index to the

The Advertisers' Index is published as a convenience and not as a part of the advertising contract. Every care will be taken to index correctly. No allowance will be made for errors or failure to insert.

A. C. Spark Plug Co.....	59	Eaton Axle & Spring Co.....	3rd Cover
Adams Mfg. Co.....	81	Eclat Rubber Co.....	80
Adjustable Bearing Co., Inc.....	80	Eclipse Machine Co.....	2
Akron-Selle Co., The.....	80		
Albertson & Co.....	58		
Allen Mfg. Co., The.....	78		
American Flatlite Co.....	75	Farran-Old Co., The.....	54
Atwater-Kent Mfg. Co.....	81	Flint Motor Company.....	69
		Flower City Spec. Co.....	80
		Follett Time Recording Co.....	78
Bearings Co. of America.....	79	Fosterin Screw Co.....	78
Bonney Forge & Tool Works.....	2nd Cover	Fredericks, H. M., Co.....	82
Boon Mfg. Co.....	82		
Bosch, Robert, Magneto Co.....	81		
Boyce & Veeder Co., Inc.....	65	G.-H. Tension Ring Co., Inc.....	84
Broderick & Bascom Rope Co.....	79	Gates Rubber Co.....	66
Brown-Lipe Gear Co.....	60	Gaylord Mfg. Company.....	63
Brunner Mfg. Co.....	81	Gemco Mfg. Co.....	80
Buick Motor Co.....	61		
Burton-Rogers Co.....	79		
		Hall Mfg. Co.....	81
		Hudson Motor Car Co.....	Front Cover
Cadillac Motor Car Co.....	49	Hydraulic Brake Co.....	47
Chevrolet Motor Co.....	73		
Chicago Roller Skate Co.....	80		
Chrysler Sales Corp.....	8		
Classified Advertising Section.....	81	James Motor Valve Co.....	7
Craveroller Co. of Amer.....	56 & 57	Johns-Manville, Inc.....	81
Curtis Pneumatic Tool Co.....	80		
		Kawneer Co.....	78
		Kingsley-Miller Co.....	78
Dieringer, E. T.....	80		

"WHITNEY"
SILENT HIGH MILEAGE CHAINS

Over 2,000,000 of these chains on the road today

**ALWAYS REPLACE WITH A
"WHITNEY"**

Authorized distributors listed below

Alabama—Birmingham
Birmingham Electric Battery Co.
Arkansas—Little Rock
Crow-Burlington Co.
Canada—Montreal
Finestone Auto Parts Co.
Canada—Saskatoon
Bowman Bros., Ltd.
Canada—Toronto
Standard Metal Goods & Auto
Parts Co., Ltd.
California—San Francisco
A. H. Coates Co.
Colorado—Denver
Auto Elec. & Appl. Co.
Connecticut—Hartford
Connecticut Auto Parts Co.
Connecticut—New Haven
Replacement Parts Co.
Connecticut—New London
New London Auto Parts Co.
Florida—Tampa
Wholesale Auto Supply House
Georgia—Atlanta
Alexander Sewald Co.
Illinois—Chicago
L. C. Smith Bearings Co.
Indiana—Indianapolis
Gibson Company
Iowa—Des Moines
Standard Bearings Co.
Iowa—Sioux City
Ralph C. Schwinn Co.
Kansas—Wichita
E. S. Cowie Electric Co.
Louisiana—New Orleans
Borden-Aicklen Auto Supply Co.,
Inc.
Maryland—Baltimore
J. R. Hunt & Co.
Maine—Portland
The Farrar-Brown Co., Inc.
Massachusetts—Boston
Replacement Parts Co.
Massachusetts—Springfield
E. B. Atmus Co.
Michigan—Detroit
Mich. Replacement Parts Corp.
Minnesota—Duluth
Duluth Auto Supply Co.
Minnesota—Minneapolis
Western Motor Supply Co.
Minnesota—Rochester
National Bushing and Parts Co.
Minnesota—St. Paul
Ramsey Motor Service Co.
Mississippi—Jackson
Robinson Bros. Motor Co.
Missouri—Kansas City
E. S. Cowie Electric Co.
Missouri—St. Louis
Auto Parts Co.

Nebraska—Omaha
Auto Elec. & Radio Corp.
New York—New York City
L. C. Bigelow & Co., Inc.
New York—Albany
E. V. Holt Distributing Co.
New York—Binghamton
United Auto Gear & Parts Co.,
Inc.
New York—Buffalo
Auto Bearings Co.
New York—Rochester
Sidney B. Roby Co.
New York—Syracuse
Syracuse Auto Parts, Inc.
New York—Utica
Utica Gear & Auto Parts Co.
Ohio—Akron
The Hardware & Supply Co.
Ohio—Cincinnati
The Baker Auto Parts Co.
Ohio—Columbus
The Griswold-Sohl Co.
Ohio—Cincinnati
Auto. Bear. & Equip. Co.
Ohio—Cleveland
Aberdeen Motor Supply Co.
Ohio—Dayton
The Lewis Motor Mart. Co.
Ohio—Toledo
Toledo Standard Parts Co.
Ohio—Youngstown
E. E. Emery Co.
Oklahoma—Oklahoma City
Harrison Smith Co.
Pennsylvania—Erie
Reliable Auto Parts Co., Inc.
Pennsylvania—Philadelphia
Auto Equip. & Ser. Co., Inc.
Pennsylvania—Pittsburgh
Pittsburgh Auto Equip. Co.
Rhode Island—Providence
W. E. Davis Co.
South Carolina—E. Charleston
Gas Engine & Electric Co.
South Carolina—Columbia
Columbia Electric Service Co.
Tennessee—Chattanooga
James Supply Co.
Tennessee—Memphis
Mills-Morris Co.
Tennessee—Nashville
Keith-Simmons & Co.
Texas—Dallas
Harrison Smith Co.
Vermont—Burlington
Vermont Hardware Co.
West Virginia—Charleston
Motor Car Supply Co.
Washington—Seattle
A. H. Coates Co.
Wisconsin—Milwaukee
Julius Andrae & Sons Co.

*Are you interested in a distributor's proposition?
If so, write us at once.*

Some good territory still open.

THE WHITNEY MFG. CO.
HARTFORD Connecticut

Kissel Motor Car Co.....	81	Ramsey Accessory Mfg. Corp.....	81
Klean-Rite Auto Laundry Co.....	78	Rickenbacker Motor Co.....	71
		Russell, Burdsall & Ward Bolt & Nut Co.....	70
Laurel Motors Corp.....	79		
Lincoln Products Co.....	80	Shaler, C. A., Co.....	62
Lupton's, David, Sons Co.....	68	Staynew Filter Corp.....	78
Lycoming Mfg. Company.....	80	Studebaker Corp., The.....	5
		Stutz Motor Car. Co.....	4
Manley Mfg. Co.....	79		
McQuay-Norris Mfg. Co.....	64	Thermoid Rubber Company.....	80
Moon Motor Car Co.....	1	Thomson Mfg. Co.....	80
Motor Wheel Corp.....	Back Cover	Timken Roller Bearing Co.....	80
Multibestos Co.....	52 & 53	Turner Mfg. Co.....	78
Nash Motors Co.....	6		
National Motor Bearing Co.....	78	U. S. Air Comp. Co.....	78
North Bros. Mfg. Co.....	3	U. S. Electrical Tool Co.....	67
		Universal Skid-Less Chain Co..	80
Oakland Motor Car Company....	51		
		Walden Co., The.....	77
Packard Electric Co.....	78	Walden-Worcester, Inc.	78
Prest-O-Lite Co., Inc. (Indiana)	81	Whitney Mfg. Co.....	83
Prest-O-Lite Co., Inc. (New York)	50	Williams Bros. Aircraft Corp..	55
Protex Chain Co., Inc.....	81	Willys-Overland, Inc.	80
		Woods Engineering Co.....	78
Quincy Compressor Co.....	80		
		Zenith-Detroit Corp.....	72



THERE has been a lot written about brakes and the various kinds of 'bestos linings, most all of which is true,

BUT

have you ever stopped to think of the important part springs play in the efficient operation of brakes?

Old or lifeless springs may cause any number of different troubles.

Brake springs of unequal tension may allow one brake to drag on the brake drum—this not only "slows up" the car, particularly on hills but also causes inefficient braking action, in that when brakes are applied the dragging brake "takes hold" first, getting but little effect out of the brake on the other wheel.

Unequalized brakes can cause skidding, unequal wear on tires, unequal wear on brake bands and many other troubles with which you are familiar.

Brakes cannot be equalized when equipped with brake springs of unequal tension.

The Brake Lining Service Station which installs new brake springs each time it relines brakes not only increases the efficiency of the brakes but builds a better reputation for the brake lining used by making it operate more satisfactorily and wear longer.

Always use G-H brake springs on all relining jobs, the slight additional cost to the customer is soon forgotten but the satisfactory service lasts.

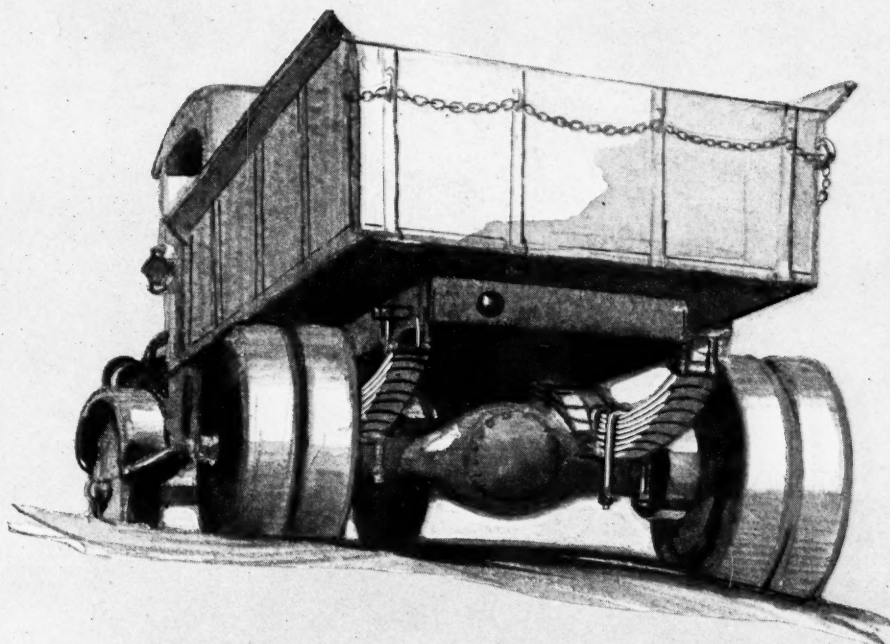
A special assortment of G-H brake springs is put up for Brake Lining Service Stations.

If your jobber cannot supply you, send us his name and we will.

G-H TENSION RING COMPANY, INC.
8 East Mount Royal Avenue, Baltimore, Maryland



PERFECTION



Exact Duplicates of Original Equipment

PERFECTION SPRINGS for replacement are made *exactly* to Car and Truck Manufacturers' specifications.

They not only fit dimensionally—but in quality and heat treatment of steel, in camber, number and thickness of leaves, and all other respects, they are exact duplicates of the Springs used

as original equipment on America's leading cars and trucks. This is only natural, as a large percentage of that original equipment is Perfection Springs.

THE EATON BUMPER & SPRING SERVICE COMPANY

(The Eaton Axle & Spring Company, Manufacturers)

Cleveland

Chicago

New York

Boston

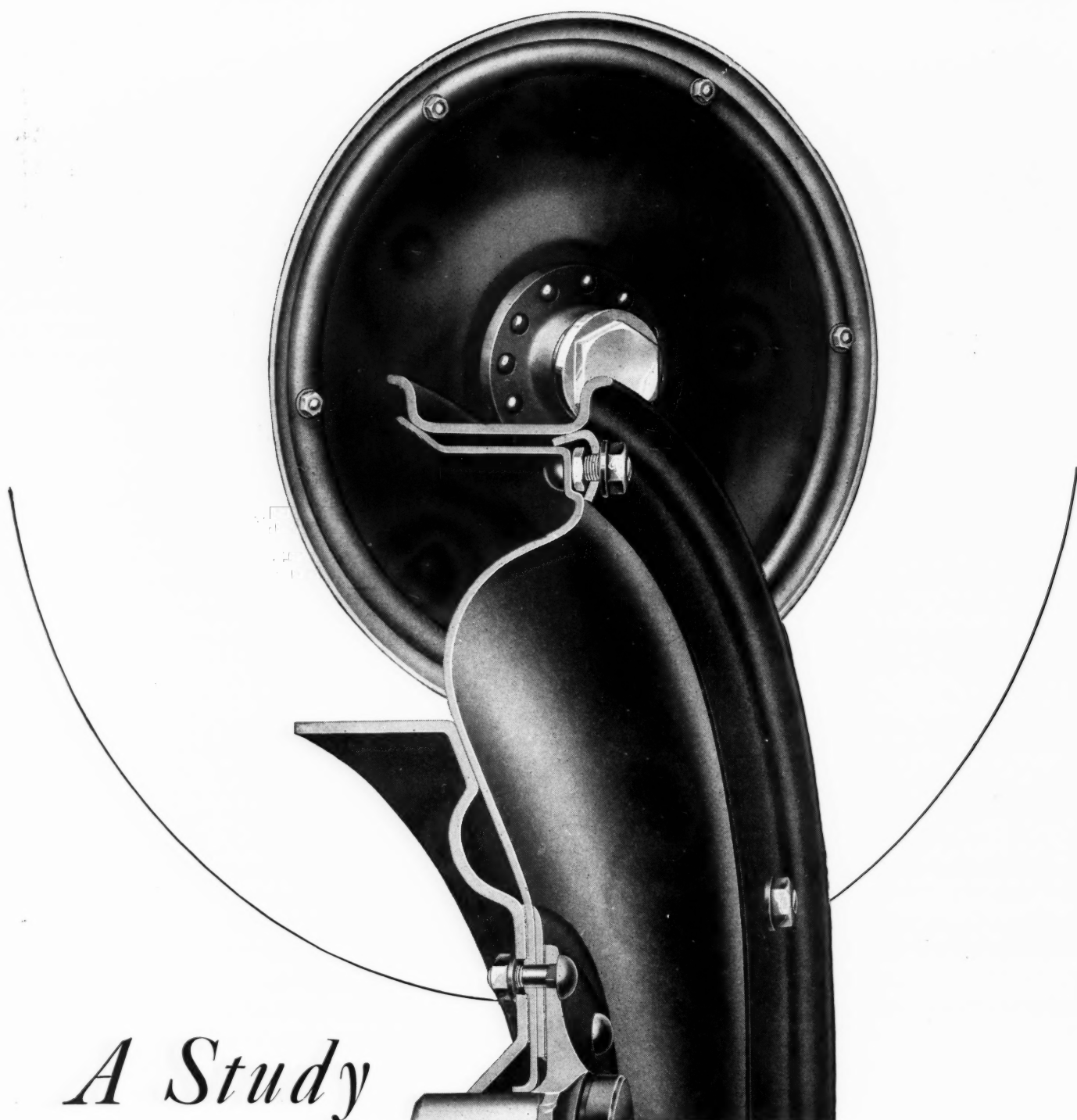
Philadelphia

Detroit

Dallas

Atlanta

SPRINGS



A Study

Much the same reasons which dictate five rims instead of five wheels for a car, dictate Tuarc Steel Wheels. They are economical, and their immense permanent strength is out of all proportion to their weight.

Not only is the popular taste for steel wheels gratified by Tuarcs; they

bring within reason for all cars the benefits of Motor Wheel engineering excellence.

The details of the Tuarc cross-section form a study in Motor Wheel eminence—Motor Wheel supplies wheels to more car manufacturers than does anybody else.

MOTOR WHEEL CORP. WOOD WHEELS • STEEL WHEELS • STAMPINGS • LANSING, MICH.

Tuarc Steel Wheels